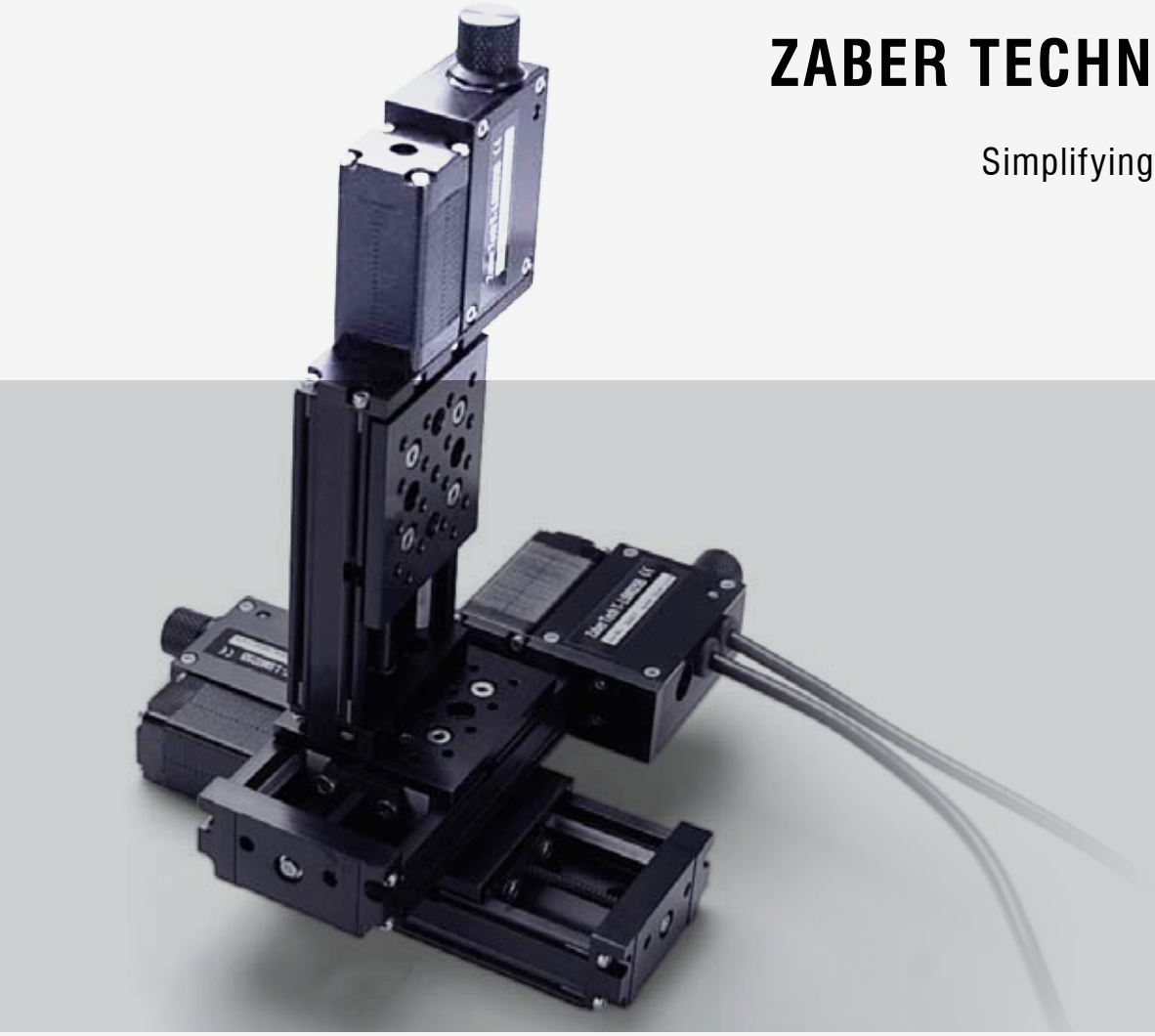
ZABER



ZABER TECHNOLOGIES

Simplifying Motion Control

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Company Profile

Zaber Technologies designs and manufactures a wide range of high precision positioning devices.
www.zaber.com

How Zaber Got Its Start

Zaber Technologies was founded in 1997 by a group of friends with diverse interests in electro-mechanical systems, programming, and physics. Back then, precision linear actuators all used DC motors with gearboxes and encoders, and they required complicated motion control cards, bulky controllers, separate driver amplifiers, and special power supplies. Precision motion control was expensive, difficult to set up, and cumbersome to use.

Zaber's founders recognized the need for an inexpensive, integrated solution for motion control. They wanted to make motion control products that were easy to set up and ready to use right out of the box, so they created the world's first precision linear actuator with a built-in controller. It was based on a stepper motor instead of a DC motor, gearbox, and encoder combination. The integration of all control and drive electronics in the same package became the foundation of Zaber's T-Series product line.

Where We Are Today

Since the introduction of our first linear actuator, the T-LA28, we have expanded our offerings to include over 100 motion control products distributed worldwide. Researchers, engineers, distributors, systems integrators, and OEMs have come to appreciate our innovative products and excellent support. We continue to advance our in-house manufacturing processes allowing us to build, test, and ship most of our products within 3–5 business days.

Our Focus

Integrating your feedback into our products

When you talk, we listen. We continually expand and improve our product line based on your feedback and requests.

Providing excellent service and support

We strive to offer the best service and technical support in the industry. We believe that these are the key ingredients in creating and sustaining a positive relationship with you.

Offering the best price-to-performance ratio on the market

We make products that strike a unique balance between quality, performance, and economy.

Simplifying motion control

Most of our products are ready to plug into a computer and run right out of the box. Our software is quick to install and easy to use. No one likes paperwork, so we also try to make ordering and servicing as painless as possible.

Our Service

30-day satisfaction guarantee

All of Zaber's standard products are backed by a 30-day satisfaction guarantee. If for any reason you are not satisfied with your purchase, you may return items in good, saleable, unmarked condition within 30 days of the purchase date for a refund, less applicable shipping costs. No questions asked and no restocking fee.

One-year warranty

All our products are warrantied against defects in manufacture and design for one full year from the purchase date. For products covered by warranty, we will repair or replace the defective device free of charge. The customer is responsible only for the cost of the return shipping to Zaber; Zaber will pay for the shipping back to the customer.

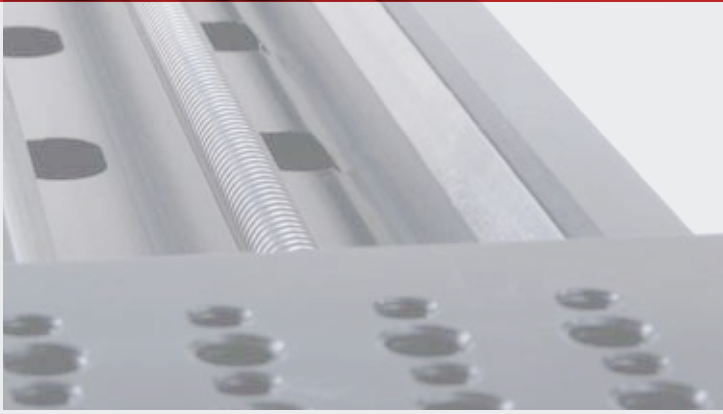
Quantity discounts available

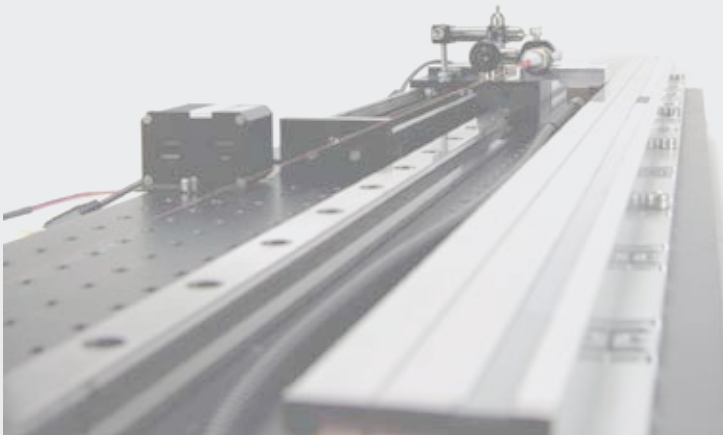
For applications that require higher quantities of devices, including OEM requirements, Zaber can offer quantity pricing. On orders of 10 or more of the same product, Zaber offers a discount of 5%. For larger quantities, either in a single delivery, or deliveries spaced over a longer period, please email us at contact@zaber.com, or call 1-888-276-8033 to speak with an applications engineer about your requirements.

Flat rate shipping within Canada and the United States

Zaber offers flat rate shipping within Canada and the United States with delivery within 2–3 business days. See www.zaber.com/ordering for more details and shipping rates.

Design Spotlight: Prototyping





Prototyping and Testing

As we get started designing a new product, one of our first steps is to build rough prototypes of the product or different sections of the product. We'll whip up some parts in the machine shop and build things like drive assemblies so we can have something in our hands as fast as possible. These concept prototypes are not usually pretty, but we always learn a lot that we couldn't tell from a computer model or from calculations. Just by holding it in your hands, you learn a lot from how it feels and moves. It's common to find some detail that has to be changed when assembling the device for the first time. Then, we test for performance and lifetime, and to see where the weak links are. Building early-stage prototypes is also motivational. It gives you a sense of accomplishment, and it's rewarding when you discover, "hey, this might actually turn into a decent product." Those are some of the times when I can't wait to get into work in the morning.

– Jesse Schuhlein, Research and Development

Automate Precision Positioning Tasks Quickly and Easily with Zaber Products

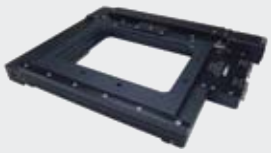
We offer an extensive line of computer-controlled positioning devices. Many of Zaber's products have built-in controllers and can be daisy-chained and controlled from a single serial port. Whether you need a single device or want to seamlessly combine several units in a multi-axis set-up, Zaber's motion control equipment is ideal for a broad range of precision positioning applications.

Multi-Axis Devices

Multi-axis systems with built-in controllers

Gantry systems

Micromanipulators



Microscope stages

Vacuum Devices

Vacuum stages and actuators with built-in controllers

Rotary Devices

Rotary stages with built-in controllers

Linear Devices

Linear actuators with built-in controllers

Miniature linear stages with built-in controllers

Long-travel linear stages with built-in controllers

Vertical lift stages

Tilt

Optic mounts with built-in controllers

Joysticks

Programmable joysticks

Controllers

Single axis stepper motor controllers

Two-axis stepper motor controllers with 2D coordination

When you talk, we listen; we continually expand and improve our product line based on your feedback.
www.zaber.com

Expandable Design

Automating more than one axis?

You can daisy-chain up to 254 Zaber devices to a single RS-232 or USB port. Power can be transmitted through the data cables of most models, allowing multiple devices to be powered from a single power supply. Minimal hardware and cabling make Zaber products easy to set up and help reduce clutter on the workbench.

Versatile Software

Zaber software is easy to use

It automatically recognizes all your devices and allows you to communicate with each one. You can easily set up automated routines, and programmers can modify the source code for advanced customization. Our software is available in many popular languages including LabVIEW, Visual Basic, C#, Excel, and C. All our software is available for free download on our support website: www.zaber.com/support/?tab=Software

Two simple RS-232 command options

The command protocol is how the software speaks with the devices. T-Series devices can use Zaber's straightforward Binary protocol for control, and information on the commands is in the product manuals on the support website here: www.zaber.com/support. A-Series devices can use either Binary or Zaber's intuitive ASCII protocol. Information about the two protocols and how to change between them can be found here:

- ⇨ Binary: zaber.com/wiki/Manuals/Binary_Protocol_Manual
- ⇨ ASCII: zaber.com/wiki/Manuals/ASCII_Protocol_Manual

Easy Installation

Step 1

Connect the Zaber controller (built into the device or stand-alone) to your computer via USB or RS-232 port using the cables included if you ordered an accessory kit.

Step 2

Connect the power supply to your Zaber device.

Step 3

Send instructions or automate your set-up using the Zaber Console, our free, open-source software, or write your own application based on our source code.

Questions or Concerns?

Our technical support is here for you

At Zaber, we specialize in motion control technology. When you contact us, you'll be speaking with an experienced applications engineer who knows our products inside and out. If you need help with your products, we can guide you. User manuals and troubleshooting guides are available online. Plus, all our products are covered by a 30-day satisfaction guarantee and a one-year warranty.

About Our Products

Built-in controllers simplify your set-up

Many of our devices are designed with built-in controllers and drivers (and some with encoders), which reduces your cost, overall device footprint, and cable clutter. Don't want the integrated controllers? We have versions compatible with our external controllers too.

The choice is yours: enjoy complete automation through computer control, or use manual control

Zaber devices are perfect for automating your positioning needs. Our free software allows you to send single commands or complex sequences. Most models offer a manual control knob so that when you want to, you can position your device by hand as well. The speed varies depending on how far you turn the knob in either direction, and the computer will continue to track the device's position throughout a manual move.

We've got the accessories you need

Most Zaber products use standard 15 V wall-mounted power supplies, and we offer suitable alternatives to match the input voltage in different regions around the world. Kit versions of Zaber products come complete with a power supply, a six-foot cable, and a serial port adaptor. Devices are also available for purchase without accessories. We can also help you choose the right cables, power supplies, or any other optional items. You can find a list of accessories for each device on our website, www.zaber.com.

The environment is important to us

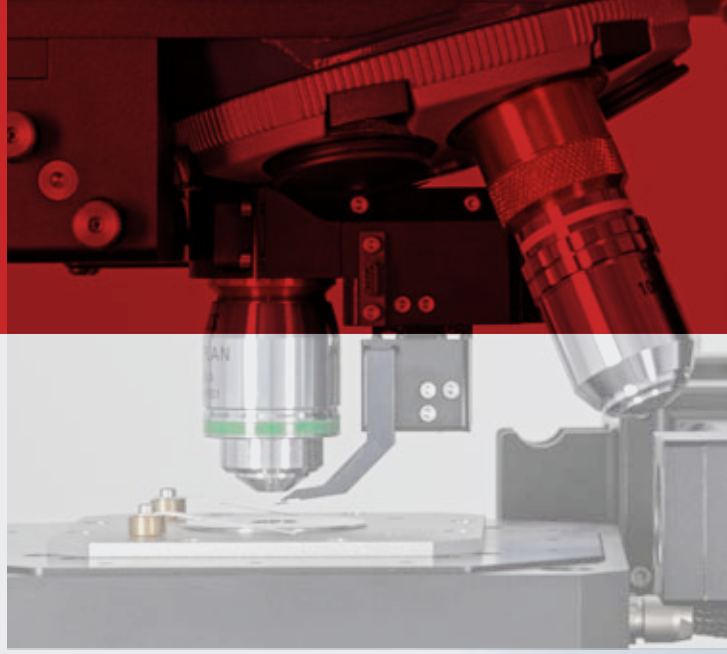
It's important to us to minimize any negative impact we may have on the environment and on the health and safety of our communities. We are continually improving our devices to reduce the use of any hazardous substances, and our products are RoHS compliant. The packaging we use is recyclable in most regions. If you have any suggestions for how we can further reduce the environmental impact of our products or activities, we would be happy to hear from you!

Integrated motor, controller, and driver in a small package.

Control options include computer, joystick, and manual control knobs.

Most devices are available as kits containing common accessories required for set-up.

Customer Spotlight: WITec GmbH



WITec GmbH

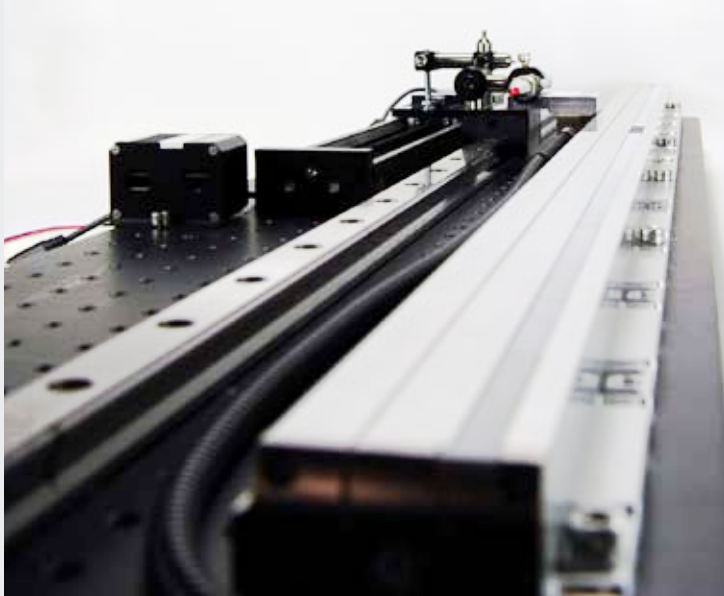
WITec is a manufacturer of high performance optical and scanning probe microscopy systems solutions for scientific and industrial applications. A modular product line allows the combination of different microscopy techniques such as Raman, NSOM, or AFM in one instrument for flexible analyses of optical, chemical, and structural properties of a sample. The instruments are distributed worldwide and are mainly used in materials sciences, life sciences, and nanotechnology. WITec's headquarters are based in Ulm, Germany, and Knoxville, TN, USA.

www.witec.de

We integrate three Zaber T-LA28A-S actuators in our Scanning Near-Field Optical Microscope alpha300 S for moving the inverted microscope's objective in three axes. An additional actuator is used for conveniently moving a filter slider. The T-LA28A-S gives us a resolution of 100 nm, perfectly matching our demanding requirements in high-resolution microscopy. We favour the Zaber actuators because they can be easily activated by our microscope control electronics and software, and because we can easily connect several actuators in one system.

– WITec GmbH

Linear Motion



- Integrated motor and controller in a tiny package
- Excellent thrust, speed, and accuracy
- Daisy-chain and control multiple devices through a single serial port

T-NA Micro Linear Actuators

Product Description

Zaber's T-NA linear actuators are computer controlled and offer 0.05 μm resolution, with either 25 mm or 50 mm travel. Each actuator comes with a hardened ball tip that you can remove if you prefer to use the built-in threaded tip or a flat tip.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. An industry standard 3/8″ (9.5 mm) diameter micrometer shank allows the T-NA to fit many popular stages. The plunger of the T-NA actuator does not rotate.

Computer Control

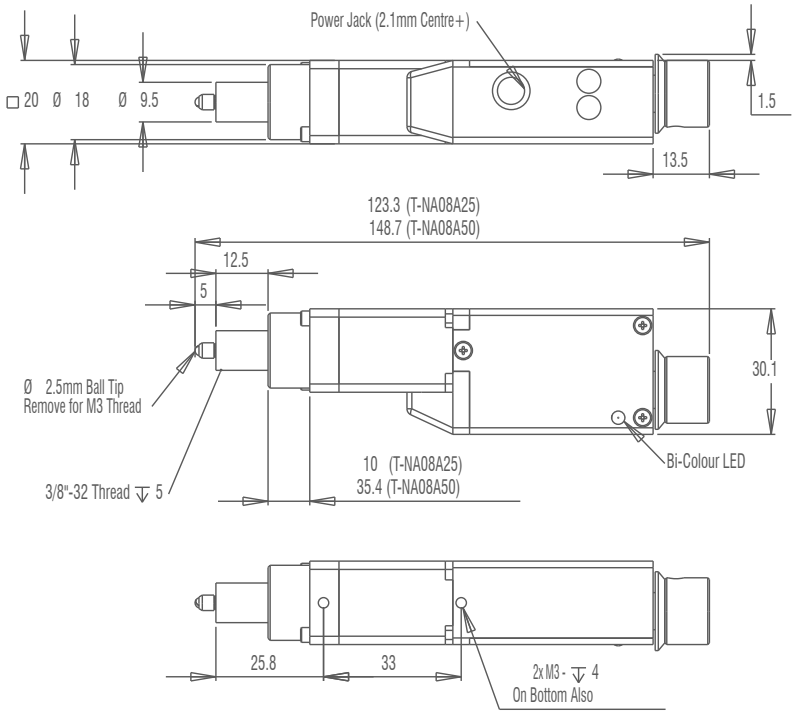
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the actuator reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

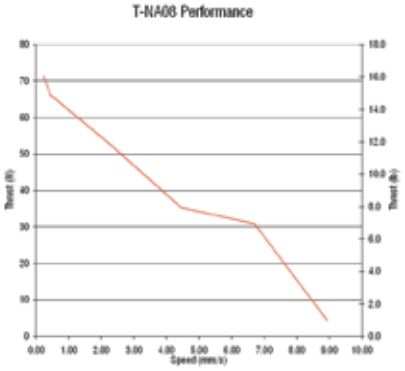
An optional knob provides smooth manual control at variable speeds in both directions for versatile operation. During a manual move the device's position is constantly transmitted to the computer and is displayed by the software.

T-NA Dimensions

Measurements in millimetres (mm)



T-NA Performance Charts



T-NA Specifications								
Model	Travel Range (mm)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (μm)	Minimum Speed (μm/s)	Maximum Speed (mm/s)	Weight (kg)
T-NA08A25	25.4	0.048	15	< 1	< 4	0.22	8	0.13
T-NA08A50	50.8	0.048	30	< 1	< 4	0.22	8	0.15

1. Complete, up-to-date specs available at www.zaber.com.
2. More compact versions with no potentiometer available.

We just used [a Zaber] actuator during a CAT scan to compress 25.4 mm diameter polyurethane tubing at 1 mm increments up to 10 mm and study the compression. It works perfectly! Thank you so much for all your help [with setting up the scripts in the Zaber Console].

– Michael Navitsky, Penn State University

- Integrated motor and controller
- Standard mounting interface replaces most manual micrometers
- Manual control knob lets you move the actuator at variable speeds
- Daisy-chain and control multiple devices through a single serial port

T-LA Miniature Linear Actuators

Product Description

Zaber's T-LA linear actuators are computer controlled, with up to 60 mm travel and 0.1 μm resolution. T-LA actuators keep their position even with no power applied, and if the actuator is idle, power to the motor is automatically removed so it can stay cool.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. An industry standard 3/8″ (9.5 mm) diameter micrometer shank allows the T-LA to fit many popular stages. The plunger of the T-LA actuator does not rotate.

Computer Control

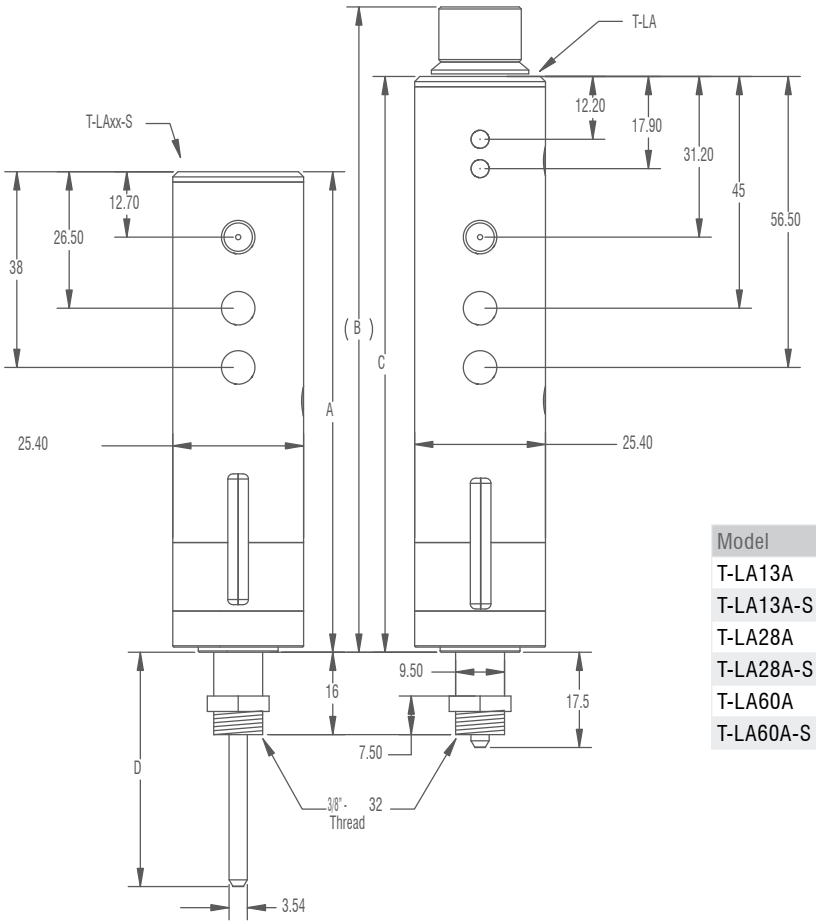
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the actuator reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

An optional knob provides smooth manual control at variable speeds in both directions for versatile operation. During a manual move the device's position is constantly transmitted to the computer and is displayed by the software.

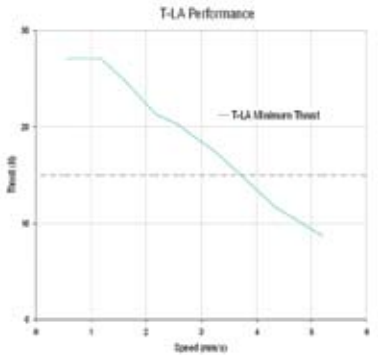
T-LA Dimensions

Measurements in millimetres (mm)



Model	A (mm)	B (mm)	C (mm)	D (mm)
T-LA13A	N/A	125.5	111.8	30.5
T-LA13A-S	93.3	N/A	N/A	30.5
T-LA28A	N/A	125.5	111.8	45.5
T-LA28A-S	93.3	N/A	N/A	45.5
T-LA60A	N/A	160.5	146.8	77.5
T-LA60A-S	128.3	N/A	N/A	77.5

T-LA Performance Charts



T-LA Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (μm)	Minimum Speed (μm/s)	Maximum Speed (mm/s)	Weight (kg)
T-LA13A	13	0.0992	24	< 4	< 6	0.93	4	0.14
T-LA28A	28	0.0992	24	< 4	< 6	0.93	4	0.14
T-LA60A	60	0.0992	36	< 4	< 6	0.93	4	0.15

1. Complete, up-to-date specs available at www.zaber.com.
2. More compact versions with no potentiometer available.

LAC Compact Motorized Actuators

- Compact size: great for applications with limited space
- Resolution down to 0.024 μm
- Designed for use with Zaber's stepper motor controllers
- Threaded tip for multiple mounting options

Product Description

The LAC linear actuators are Zaber's most compact actuators. They have a resolution of 0.024 μm and a travel length of 10 mm. Each actuator comes with a hardened ball tip that you can remove if you prefer to use the built-in threaded tip (M3) or a flat tip.

Installation

The LAC Series actuators are designed to connect directly to Zaber's stepper motor controllers (purchased separately). Zaber's standalone controllers and devices with built-in controllers can all be daisy-chained to communicate over a single computer connection. This simplifies set-up and reduces cable clutter.

Computer Control

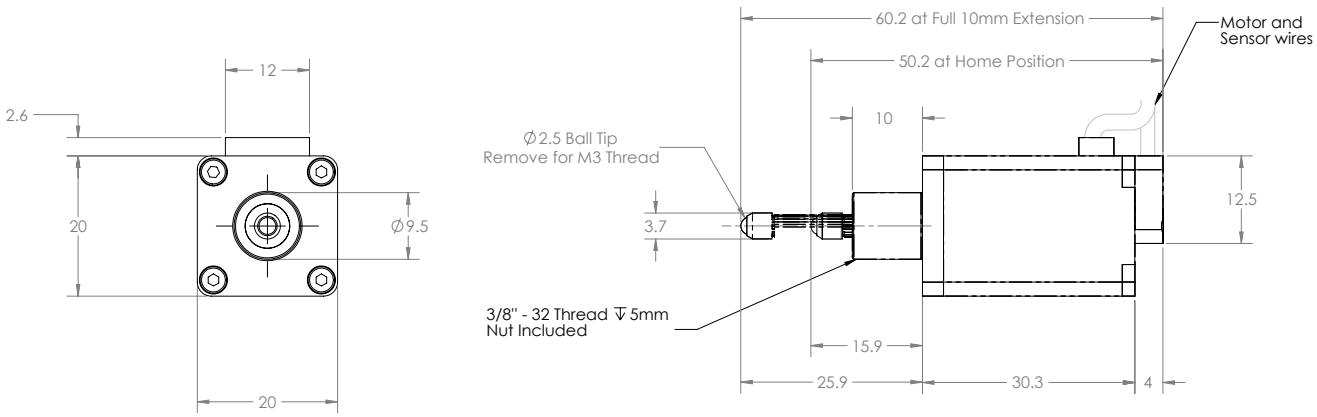
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the controller reports the new position of the actuator. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

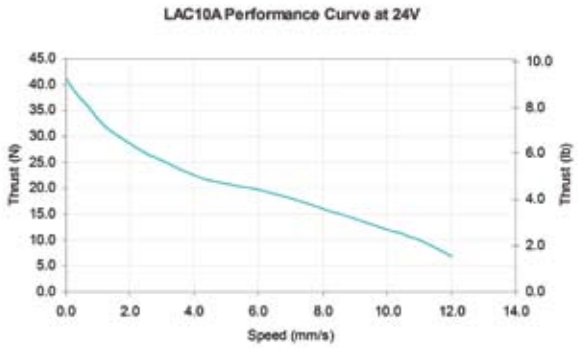
Zaber's stepper motor controllers include an indexed knob that provides convenient manual control via user-selectable modes. In velocity mode, each increment of the knob increases or decreases the speed by a fixed amount. In displacement mode, each increment of the knob moves the device by a user-configurable distance. You can also issue a stop command by depressing the knob during any operation. The knob allows for versatile control even without a computer.

LAC Dimensions

Measurements in millimetres (mm)



LAC Performance Charts



LAC Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (μm)	Minimum Speed (μm/s)	Maximum Speed (mm/s)	Weight (kg)
LAC10A-T4	10	0.0238125	10	< 1.5	< 2	0.0145	12	0.05

1. Complete, up-to-date specs available at www.zaber.com.

A big part of what I like about working at Zaber is getting to know customers and learning about their new and novel applications. In particular, designing custom products for OEMs can be a fulfilling experience. It's exciting seeing customers' products become successful with Zaber's devices inside.

– Jesse Schuhlein, Research and Development

NA Motorized Linear Actuators

- Available in several sizes for a variety of thrusts and speeds
- Resolution down to 0.05 μm
- Designed for use with Zaber's stepper motor controllers
- Threaded tip for multiple mounting options

Product Description

Zaber's NA actuators offer a wide range of size, thrust, and speed options not available in our actuators with built-in controllers. The NA Series actuators are available with travel ranges from 16 mm to 60 mm and thrust up to 1200 N (270 lb), and they have a threaded tip for push/pull operation.

Installation

The NA Series actuators are designed to connect directly to Zaber's stepper motor controllers (purchased separately). Zaber's standalone controllers and devices with built-in controllers can all be daisy-chained to communicate over a single computer connection. This simplifies set-up and reduces cable clutter.

Computer Control

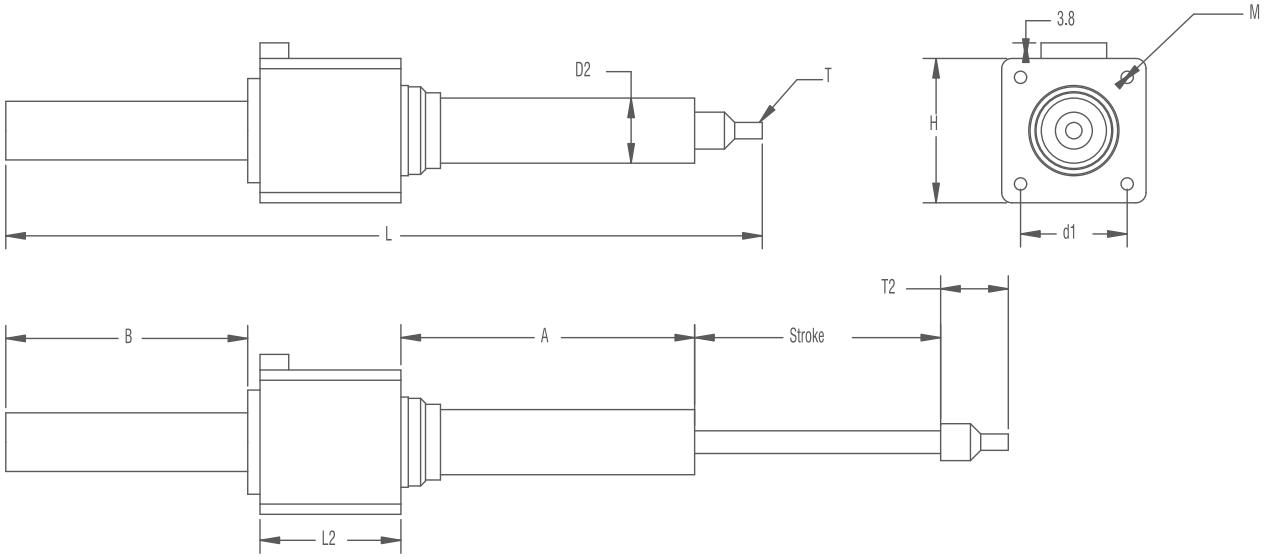
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the controller reports the new position of the actuator. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

Zaber's stepper motor controllers include an indexed knob that provides convenient manual control via user-selectable modes. In velocity mode, each increment of the knob increases or decreases the speed by a fixed amount. In displacement mode, each increment of the knob moves the device by a user-configurable distance. You can also issue a stop command by depressing the knob during any operation. The knob allows for versatile control even without a computer.

NA Dimensions

Measurements in millimetres (mm)



Model	A (mm)	B (mm)	L (mm)	d1 (mm)	D2 (mm)	H (mm)	L2 (mm)	M*	T	T2 (mm)
NA08x16-T4	20.5	18.7	80.2	15.4	9	20	27	M2	#4-40	11.5
NA08x30-T4	33	32.7	106.7	15.4	9	20	27	M2	#4-40	11.5
NA11B16-T4	26.8	16	86.9	23	14	28.2	32.2	M2.5	M3	8.8
NA11B30-T4	39.5	28	111.4	23	14	28.2	32.2	M2.5	M3	8.8
NA11B60-T4	70.5	60.6	175.9	23	14	28.2	32.2	M2.5	M3	8.8
NA14B16-T4	25.8	16	95.8	26	15.9	35.2	34.4	M3	M4	16.5
NA14B30-T4	38.6	29	121.5	26	15.9	35.2	34.4	M3	M4	16.5
NA14B60-T4	70.2	60.4	183.1	26	15.9	35.2	34.4	M3	M4	16.5
NA23C60-T4	74.5	65.5	208.4	47.1	28	56.4	45.2	5.2	1/4″-20	22.1
NA34C60-T4	80	65.5	266.2	69.3	40	86.3	78.6	6.5	7/16″-14	38.6

*In NA08, NA11, and NA14 models, “M” is a threaded hole; in NA23 and NA34 models, “M” is a through-hole (diameter given in mm).

NA Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (μm)	Minimum Speed (μm/s)	Maximum Speed (mm/s)	Weight (kg)
NA08A16-T4	16	0.047625	20	< 20	< 15	0.447	26	0.06
NA08A30-T4	30	0.047625	20	< 20	< 15	0.447	26	0.07
NA08B16-T4	16	0.09525	20	< 20	< 15	0.893	52	0.06
NA08B30-T4	30	0.09525	20	< 20	< 15	0.893	52	0.07
NA11B16-T4	16	0.09921875	25	< 5	< 18	0.930	52	0.14
NA11B30-T4	30	0.09921875	25	< 5	< 18	0.930	52	0.15
NA11B60-T4	60	0.09921875	36	< 5	< 18	0.930	52	0.16
NA14B16-T4	16	0.09525	25	< 5	< 20	0.893	52	0.14
NA14B30-T4	30	0.09525	25	< 5	< 20	0.893	52	0.21
NA14B60-T4	60	0.09525	36	< 5	< 20	0.893	52	0.22
NA23C60-T4	60	0.1984375	36	< 5	< 30	0.930	80	0.74
NA34C60-T4	60	0.1984375	45	< 10	< 65	0.930	30	2.63

1. Complete, up-to-date specs available at www.zaber.com.

A-BAR High Thrust Motorized Electric Cylinders

- 200 or 300 mm travel
- 540 N peak thrust; up to 65 mm/s speed
- Lead screw or ball screw driven; inline and parallel drive configurations
- Available with built-in encoders for slip/stall detection, and/or integrated controller

Product Description

Zaber's A-BAR products are computer controlled, motorized, ball screw (or lead screw) driven electric cylinders with optional integrated controllers and feedback encoders. Each device is available in either an inline or parallel drive (pictured) configuration. They are stand-alone units requiring only a standard 48 V power supply. A manual knob on devices with built-in controllers permits manual control.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Convenient 6-pin mini-DIN cables on the stage allow for direct interconnection between devices in close proximity. For longer distances, we offer standard cable extensions.

Computer Control

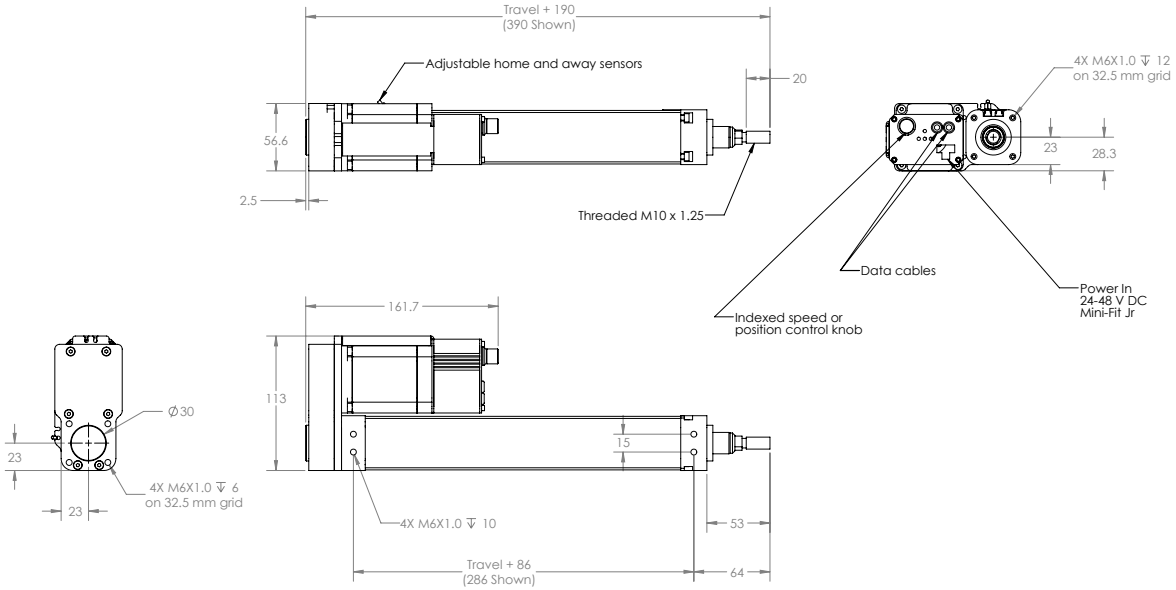
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the actuator reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

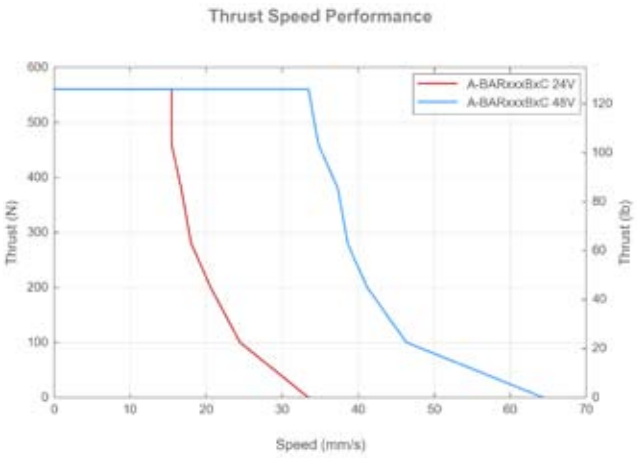
An indexed knob provides convenient manual control for versatile operation. During a manual move, the device's position is constantly transmitted to the computer and is displayed by the software.

A-BAR Dimensions

Measurements in millimetres (mm)



A-BAR Performance Charts



A-BAR Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Peak Thrust (N)	Backlash (μm)	Minimum Speed (μm/s)	Maximum Speed (mm/s)	Maximum Current Draw (mA)	Weight (kg)
A-BAR200BLC	203.2	0.248046875	70	< 30	540	< 120	0.000151	65	1100	2.66
A-BAR300BLC	304.8	0.248046875	102	< 30	540	< 120	0.000151	65	1100	3.00
A-BAR200BPC	203.2	0.248046875	70	< 30	540	< 120	0.000151	65	1100	2.72
A-BAR300BPC	304.8	0.248046875	102	< 30	540	< 120	0.000151	65	1100	3.06

1. Complete, up-to-date specs available at www.zaber.com.
2. Externally controlled versions available.

T-LSM Motorized Linear Stages

- Integrated motor and controller
- Very compact with high speed, thrust, and accuracy
- 10 kg load capacity
- Up to 29 mm/s speed and up to 55 N thrust

Product Description

Zaber's T-LSM miniature motorized translation stages are computer controlled and have high thrust and speed capabilities for such a compact size. At only 21 mm high, they are perfect for applications where a low profile is required. Zaber's innovative stage design allows speeds up to 29 mm/s and loads up to 10 kg. These stages are ready for assembly in XY or XYZ configuration with no additional hardware required. See Multi-Axis section for more information.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Convenient 6-pin mini-DIN cables on the stage allow for direct interconnection between devices in close proximity. For longer distances, we offer standard cable extensions.

Computer Control

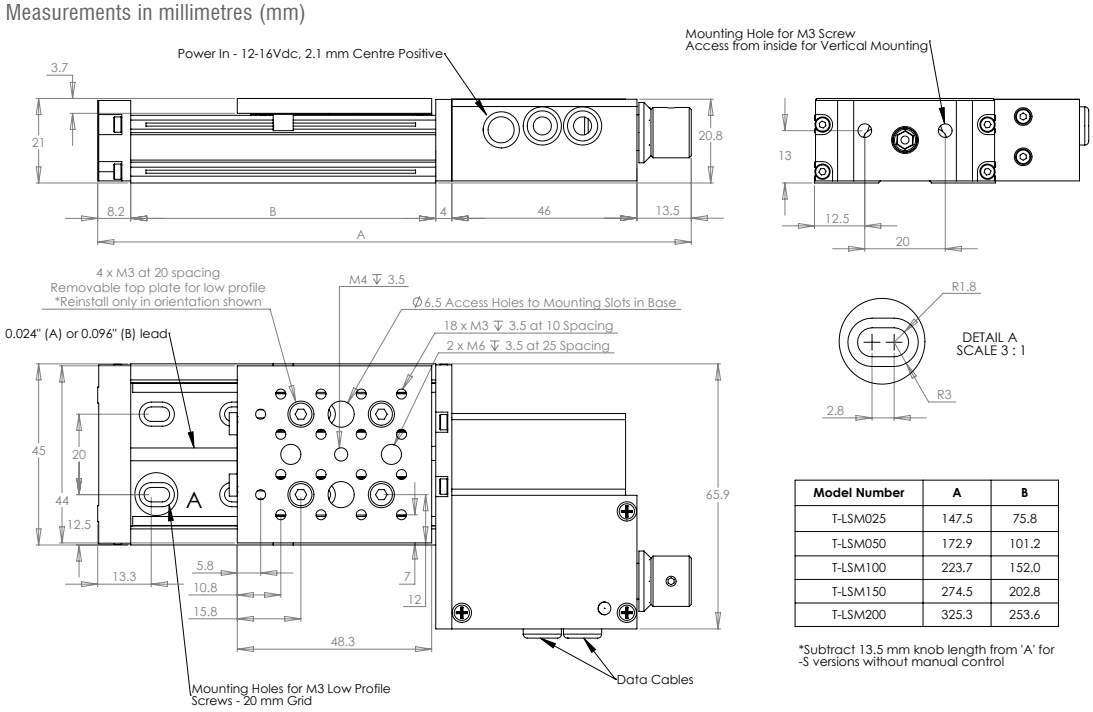
We provide free software so you can easily control your Zaber devices. Zaber's intuitive Windows software makes it easy to control the speed and position of the unit and change the device settings. After completing a move command, the stage will report its position through the RS-232 link. Built-in scripting allows you to easily set up complex automation routines. For LabVIEW users, we offer a free, certified LabVIEW driver. For a detailed list of available commands see the user's manual.

Manual Control

An optional knob provides smooth manual control at variable speeds in both directions for versatile operation. During a manual move the device's position is constantly transmitted to the computer and is displayed by the software.

T-LSM Dimensions

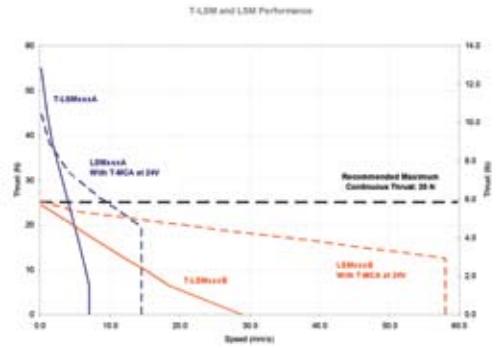
Measurements in millimetres (mm)



Model Number	A	B
T-LSM025	147.5	75.8
T-LSM050	172.9	101.2
T-LSM100	223.7	152.0
T-LSM150	274.5	202.8
T-LSM200	325.3	253.6

*Subtract 13.5 mm knob length from 'A' for -S versions without manual control

T-LSM Performance Charts



T-LSM Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (µm)	Accuracy (µm)	Repeatability (µm)	Backlash (µm)	Maximum Speed (mm/s)	Maximum Centred Load (N)	Maximum Cantilever Load (N·cm)	Peak Thrust (N)	Weight (kg)
T-LSM025A	25.4	0.048	8	< 1	< 3	7	100	300	55	0.31
T-LSM025B	25.4	0.19	8	< 4	< 13	29	100	300	21	0.31
T-LSM050A	50.8	0.048	15	< 1	< 3	7	100	300	55	0.32
T-LSM050B	50.8	0.19	15	< 4	< 13	29	100	300	21	0.32
T-LSM100A	101.6	0.048	30	< 1	< 3	7	100	300	55	0.35
T-LSM100B	101.6	0.19	30	< 4	< 13	29	100	300	21	0.35
T-LSM150A	152.4	0.048	46	< 1	< 3	7	100	300	55	0.39
T-LSM150B	152.4	0.19	46	< 4	< 13	29	100	300	21	0.39
T-LSM200A	203.2	0.048	61	< 1	< 3	7	100	300	55	0.42
T-LSM200B	203.2	0.19	61	< 4	< 13	29	100	300	21	0.42

1. Complete, up-to-date specs available at www.zaber.com.
2. Faster, externally controlled versions available; more compact versions with no potentiometer available.

LSA Micro Motorized Linear Stages

- Compact size: great for applications with limited space
- 10 or 25 mm travel
- Designed for use with Zaber's stepper motor controllers
- Easily mounts in XY and XYZ configurations

Product Description

Zaber's LSA Series stages are designed to fit into the smallest spaces without sacrificing performance or features. Small but powerful, these stages have up to 10 mm/s speed and up to 3.5 kg thrust. With a microstep size of less than 25 nm and less than 1 μm repeatability, they allow for reliable ultra-fine positioning. The LSA stages are wired with a male D-sub 15 connector for plug-and-play use with Zaber's stepper motor controllers. Our handy kits include free software and all of the accessories that you will need to get the stage running right out of the box.

Installation

The LSA Series stages are designed to connect directly to Zaber's stepper motor controllers (purchased separately). Zaber's standalone controllers and devices with built-in controllers can all be daisy-chained to communicate over a single computer connection. This simplifies set-up and reduces cable clutter.

Computer Control

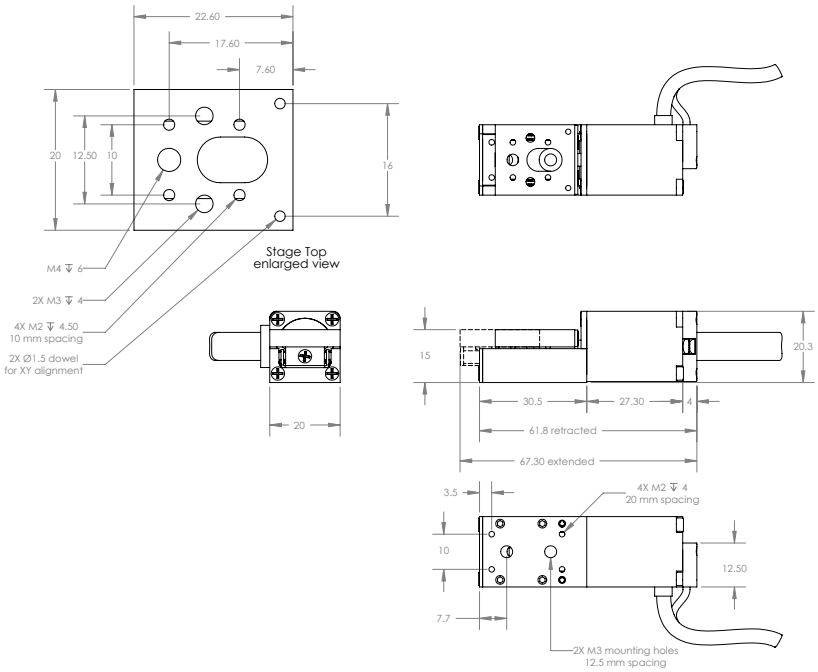
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the controller reports the new position of the actuator. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

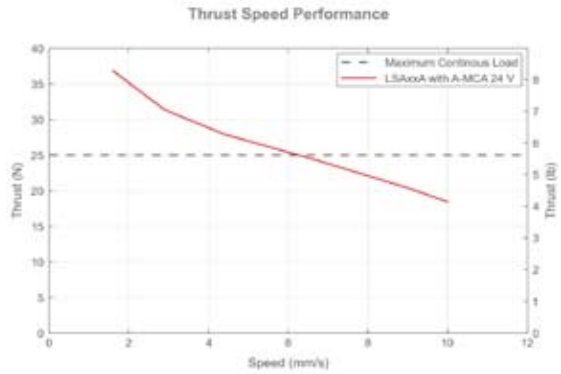
Zaber's stepper motor controllers include an indexed knob that provides convenient manual control via user-selectable modes. In velocity mode, each increment of the knob increases or decreases the speed by a fixed amount. In displacement mode, each increment of the knob moves the device by a user-configurable distance. You can also issue a stop command by depressing the knob during any operation. The knob allows for versatile control even without a computer.

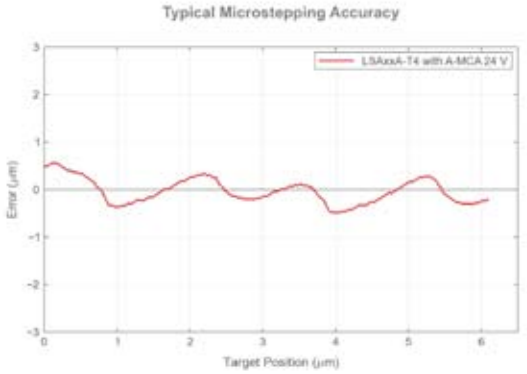
LSA Dimensions

Measurements in millimetres (mm)



LSA Performance Charts





LSA Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (µm)	Accuracy (µm)	Repeatability (µm)	Backlash (µm)	Maximum Speed (mm/s)	Maximum Centred Load (N)	Maximum Cantilever Load (N·cm)	Peak Thrust (N)	Weight (kg)
LSA10A-T4	10	0.0238	18	< 1	< 5	10	25	100	35	0.12
LSA25A-T4	25	0.0238	24	< 1	< 5	10	30	125	35	0.13

1. Complete, up-to-date specs available at www.zaber.com.

I finally got a chance to work with the Zaber stages we ordered a while ago. I am very impressed – the documentation is excellent, and the devices actually work like they are supposed to, and they reply to commands as documented. A real pleasure!

– Martin Grill, Research Engineer, SRI International

T-LS Motorized Linear Stages

- Integrated stage, motor, and controller
- Mount multiple stages in XY or XYZ configuration
- Daisy-chain and control multiple stages through a single serial port
- Manual control knob lets you move the stage at variable speeds

Product Description

Zaber's T-LS motorized linear translation stages are computer controlled, have 0.1 μm resolution, and have either 13 mm or 28 mm travel. They mount together in XY configuration (without an angle bracket) or in XYZ configuration with our AB90 angle bracket. See Multi-Axis section for more information.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Convenient 6-pin mini-DIN cables on the stage allow for direct interconnection between devices in close proximity. For longer distances, we offer standard cable extensions.

Computer Control

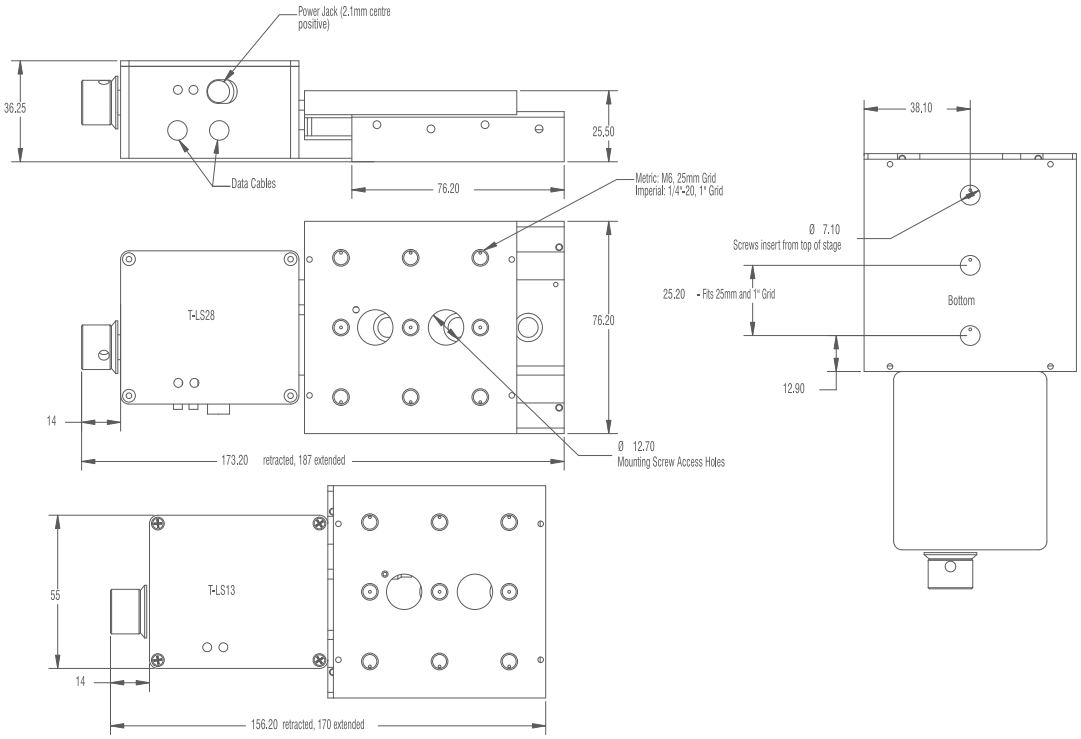
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

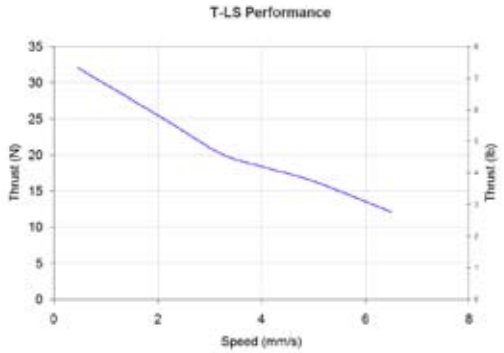
An optional knob provides smooth manual control at variable speeds in both directions for versatile operation. During a manual move the device's position is constantly transmitted to the computer and is displayed by the software.

T-LS Dimensions

Measurements in millimetres (mm)



T-LS Performance Charts



T-LS Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (μm)	Minimum Speed (μm/s)	Maximum Speed (mm/s)	Maximum Centred Load (N)	Maximum Cantilever Load (N·cm)	Peak Thrust (N)	Weight (kg)
T-LS13E	13	0.099	29	< 2	< 14	0.93	6.5	100	125	32	0.57
T-LS13M	13	0.099	29	< 2	< 14	0.93	6.5	100	125	32	0.57
T-LS13E-S	13	0.099	29	< 2	< 14	0.93	6.5	100	125	32	0.57
T-LS13M-S	13	0.099	29	< 2	< 14	0.93	6.5	100	125	32	0.57
T-LS28E	28	0.099	29	< 2	< 14	0.93	6.5	100	125	32	0.59
T-LS28M	28	0.099	29	< 2	< 14	0.93	6.5	100	125	32	0.59
T-LS28E-S	28	0.099	29	< 2	< 14	0.93	6.5	100	125	32	0.59
T-LS28M-S	28	0.099	29	< 2	< 14	0.93	6.5	100	125	32	0.59

1. Complete, up-to-date specs available at www.zaber.com.

T-LHM Motorized Linear Stages

- Ideal for single axis applications
- 3 kg load capacity
- Up to 18 mm/s speed; 13 N peak thrust
- 25 N-cm cantilever load
- Our most affordable linear stage with built-in controller

Product Description

Zaber's T-LHM motorized linear stages offer a compact size and affordable price tag. These stages are ideal for light centered-load, single-axis applications. At only 23 mm high, these stages are excellent for applications where a small profile is required. Like all of Zaber's products, the T-LHM Series is designed to be "plug and play" and very easy to set up and operate.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Convenient 6-pin mini-DIN cables on the stage allow for direct interconnection between devices in close proximity. For longer distances, we offer standard cable extensions.

Computer Control

We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

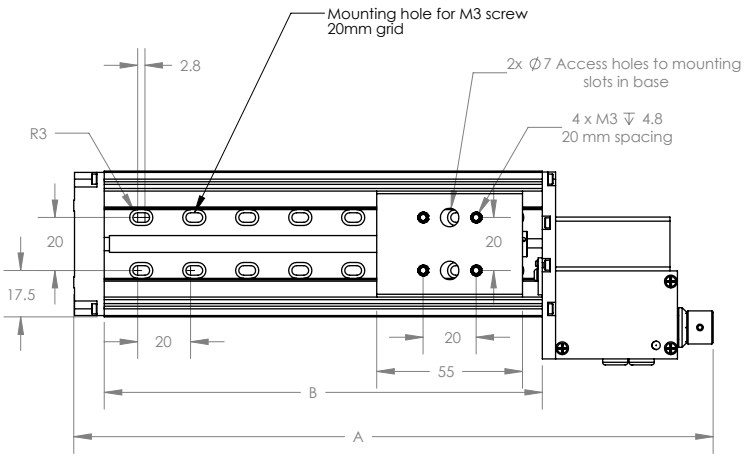
An optional knob provides smooth manual control at variable speeds in both directions for versatile operation. During a manual move the device's position is constantly transmitted to the computer and is displayed by the software.

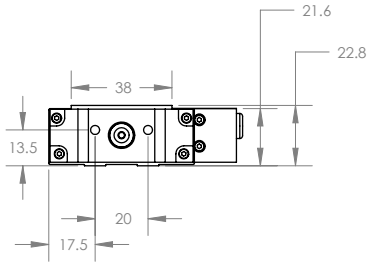
T-LHM Dimensions

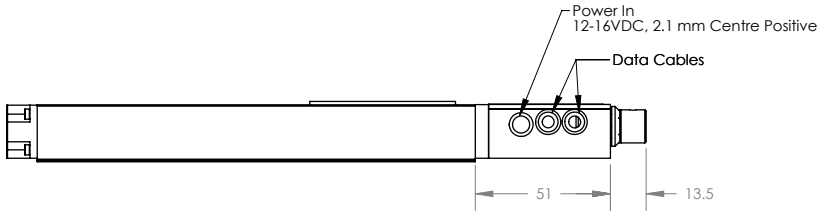
Measurements in millimetres (mm)

Model Number	A	B
T-LHM025	165.2	89.2
T-LHM050	190.6	114.6
T-LHM100	241.4	165.4
T-LHM150	292.2	216.2
T-LHM200	343.0	267.0

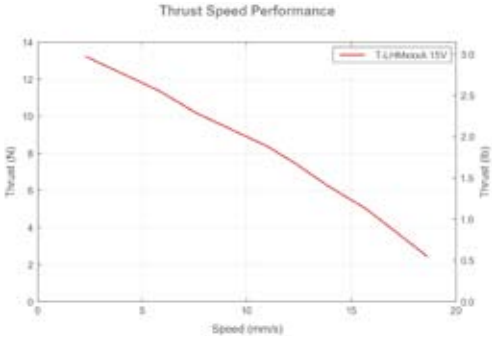
*Subtract 13.5 mm knob length from 'A' for -S versions without manual control







T-LHM Performance Charts



T-LHM Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (μm)	Minimum Speed (μm/s)	Maximum Speed (mm/s)	Maximum Centred Load (N)	Maximum Cantilever Load (N·cm)	Peak Thrust (N)	Weight (kg)
T-LHM025A	25.4	0.124	50	< 4	< 20	0.0012	18	30	25	13	0.34
T-LHM025A-S	25.4	0.124	50	< 4	< 20	0.0012	18	30	25	13	0.34
T-LHM050A	50.8	0.124	75	< 4	< 20	0.0012	18	30	25	13	0.40
T-LHM050A-S	50.8	0.124	75	< 4	< 20	0.0012	18	30	25	13	0.40
T-LHM100A	101.6	0.124	125	< 4	< 20	0.0012	18	30	25	13	0.46
T-LHM100A-S	101.6	0.124	125	< 4	< 20	0.0012	18	30	25	13	0.46
T-LHM150A	152.4	0.124	175	< 4	< 20	0.0012	18	30	25	13	0.50
T-LHM150A-S	152.4	0.124	175	< 4	< 20	0.0012	18	30	25	13	0.50
T-LHM200A	203.2	0.124	225	< 4	< 20	0.0012	18	30	25	13	0.56
T-LHM200A-S	203.2	0.124	225	< 4	< 20	0.0012	18	30	25	13	0.56

1. Complete, up-to-date specs available at www.zaber.com.

T-LSR Motorized Linear Slides

- Integrated motor and controller
- Daisy-chain and control multiple devices through a single serial port
- Ready to assemble in XY or XYZ configuration

Product Description

Zaber's T-LSR motorized linear slides are computer controlled and have travel ranges from 75 mm up to 450 mm. These slides are available with various lead screw pitches so you can select the device with the resolution and speed capability that you need. Zaber's innovative slide design is capable of speeds up to 80 mm/s and can support loads up to 20 kg. These slides are ready for assembly in XY or XYZ configuration with no additional hardware required. See Multi-Axis section for more information.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Convenient 6-pin mini-DIN cables on the slide allow for direct interconnection between devices in close proximity. For longer distances, we offer standard cable extensions.

Computer Control

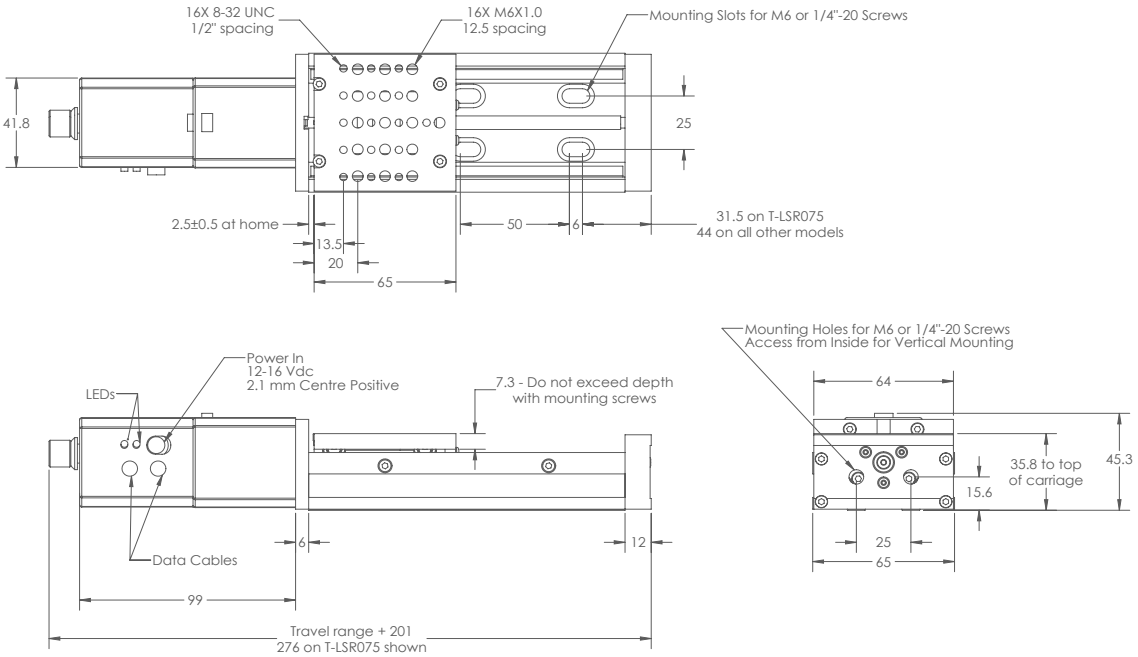
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the slide reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

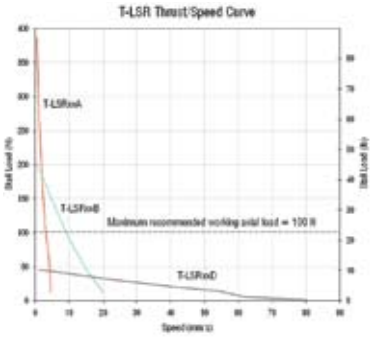
An optional knob provides smooth manual control at variable speeds in both directions for versatile operation. During a manual move the device's position is constantly transmitted to the computer and is displayed by the software.

T-LSR Dimensions

Measurements in millimetres (mm)



T-LSR Performance Charts



T-LSR Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (μm)	Minimum Speed (μm/s)	Maximum Speed (mm/s)	Maximum Centred Load (N)	Maximum Cantilever Load (N·cm)	Weight (kg)
T-LSR075A	75	0.099	23	< 2.5	< 5	0.93	4	200	800	1.2
T-LSR075B	75	0.496	15	< 2.5	< 7	4.65	20	200	800	1.2
T-LSR075D	75	1.984	15	< 3	< 20	18.6	80	200	800	1.2
T-LSR150A	150	0.099	45	< 2.5	< 5	0.93	4	200	800	1.4
T-LSR150B	150	0.496	15	< 2.5	< 7	4.65	20	200	800	1.4
T-LSR150D	150	1.984	15	< 3	< 20	18.6	80	200	800	1.4
T-LSR300A	300	0.099	90	< 2.5	< 5	0.93	4	200	800	1.8
T-LSR300B	300	0.496	30	< 2.5	< 7	4.65	20	200	800	1.8
T-LSR300D	300	1.984	40	< 3	< 20	18.6	80	200	800	1.8
T-LSR450A	450	0.099	135	< 2.5	< 5	0.93	4	200	800	2.3
T-LSR450B	450	0.496	45	< 2.5	< 7	4.65	20	200	800	2.3
T-LSR450D	450	1.984	45	< 3	< 20	18.6	80	200	800	2.3

1. Complete, up-to-date specs available at www.zaber.com.

A-LSQ Motorized Linear Stages

- Integrated motor and controller
- 20 kg load capacity
- Up to 1 m/s speed and up to 100 N thrust

Product Description

Zaber's A-LSQ motorized linear stages are computer controlled and have travel ranges from 75 mm up to 600 mm. These stages are available with various lead screw pitches so you can select the device with the resolution and speed capability that you need. Zaber's innovative stage design is capable of speeds up to 1 m/s and can support loads up to 20 kg. These stages are ready for assembly in XY or XYZ configuration with no additional hardware required. See Multi-Axis section for more information.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Convenient 6-pin mini-DIN cables on the stage allow for direct interconnection between devices in close proximity. For longer distances, we offer standard cable extensions.

Computer Control

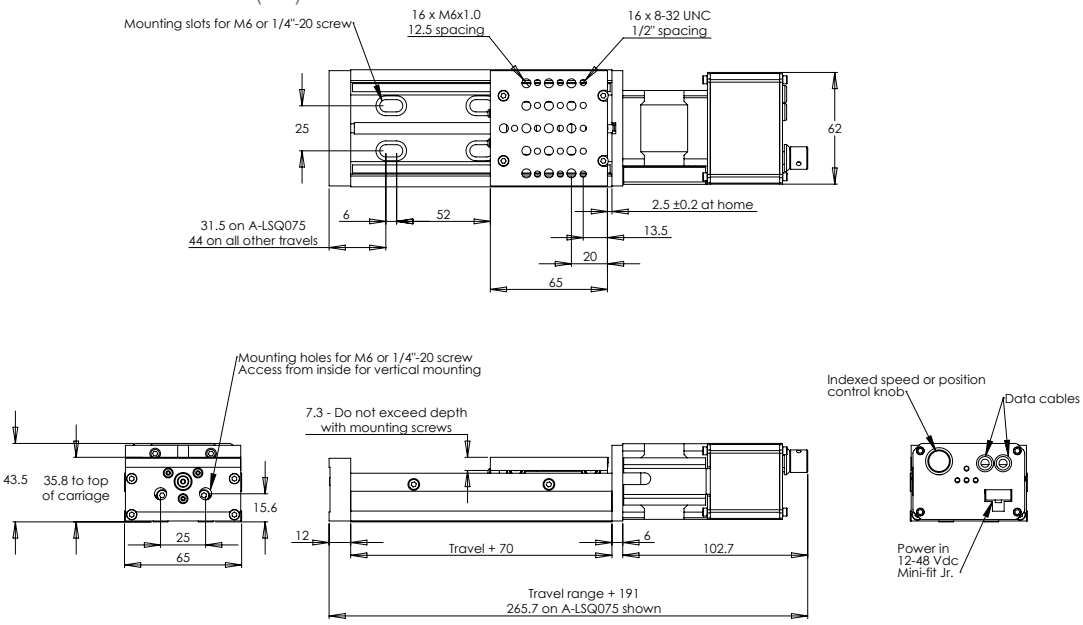
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

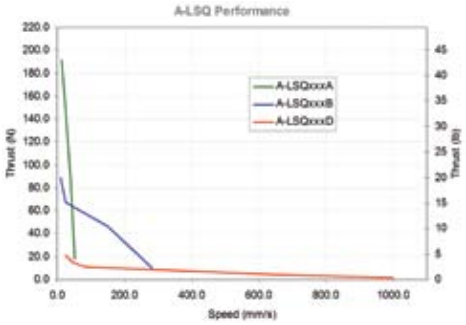
An indexed knob provides convenient manual control for versatile operation. During a manual move, the device's position is constantly transmitted to the computer and is displayed by the software.

A-LSQ Dimensions

Measurements in millimetres (mm)



A-LSQ Performance Charts



A-LSQ Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (μm)	Minimum Speed (μm/s)	Maximum Speed (mm/s)	Maximum Centred Load (N)	Maximum Cantilever Load (N·cm)	Weight (kg)
A-LSQ075A	75	0.099	23	< 2.5	< 5	0.061	53	200	800	1.2
A-LSQ075B	75	0.496	15	< 2.5	< 7	0.303	280	200	800	1.2
A-LSQ075D	75	1.984	15	< 3	< 20	1.211	1000	200	800	1.2
A-LSQ150A	150	0.099	45	< 2.5	< 5	0.061	53	200	800	1.4
A-LSQ150B	150	0.496	15	< 2.5	< 7	0.303	280	200	800	1.4
A-LSQ150D	150	1.984	15	< 3	< 20	1.211	1000	200	800	1.4
A-LSQ300A	300	0.099	90	< 2.5	< 5	0.061	53	200	800	1.8
A-LSQ300B	300	0.496	30	< 2.5	< 7	0.303	280	200	800	1.8
A-LSQ300D	300	1.984	30	< 3	< 20	1.211	1000	200	800	1.8
A-LSQ450A	450	0.099	135	< 2.5	< 5	0.061	53	200	800	2.3
A-LSQ450B	450	0.496	45	< 2.5	< 7	0.303	280	200	800	2.3
A-LSQ450D	450	1.984	45	< 3	< 20	1.211	1000	200	800	2.3
A-LSQ600A	600	0.099	150	< 2.5	< 5	0.061	42	200	800	2.9
A-LSQ600B	600	0.496	150	< 2.5	< 7	0.303	225	200	800	2.9
A-LSQ600D	600	1.984	150	< 3	< 20	1.211	800	200	800	2.9

1. Complete, up-to-date specs available at www.zaber.com.
2. Faster, externally controlled versions available; more compact versions with no potentiometer available.

A-LSQ-E Closed-Loop Motorized Linear Stages

- Integrated motor, encoder, and controller
- Encoder position feedback with slip/stall detection and automatic recovery
- Up to 1 m/s travel speed

Product Description

Zaber's A-LSQ-E stages are computer controlled and come with integrated rotary feedback encoders. Stage travel ranges are from 75 mm to 600 mm. A built-in encoder allows closed-loop operation and slip/stall recovery features. Zaber's innovative stage design allows for speeds up to 1 m/s and loads up to 20 kg. These stages are ready for assembly in XY or XYZ configuration with no additional hardware required. See Multi-Axis section for more information.

Closed-Loop Operation

A-LSQ-E stages use built-in rotary encoders to provide position verification. Upon detection of any slipping or stalling, the stages report the stall and can be set to automatically recover their position. Several modes of recovery behaviour are available.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Convenient 6-pin mini-DIN cables on the stage allow for direct interconnection between devices in close proximity. For longer distances, we offer standard cable extensions.

Computer Control

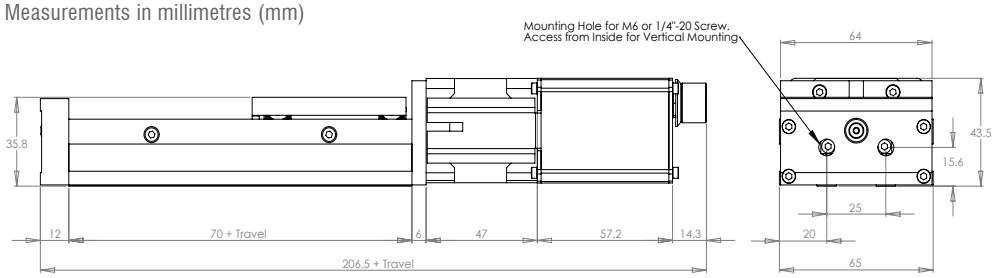
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

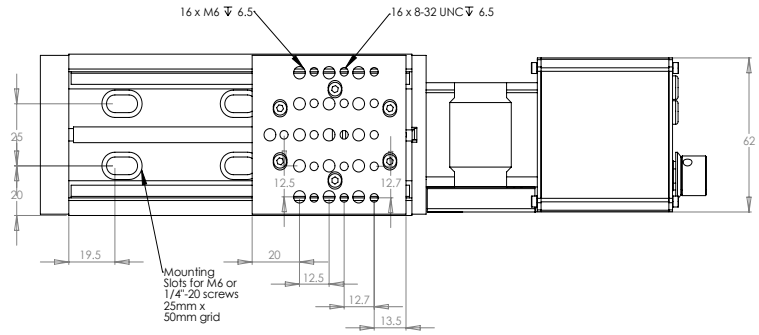
Manual Control

An indexed knob provides convenient manual control for versatile operation. During a manual move, the device's position is constantly transmitted to the computer and is displayed by the software.

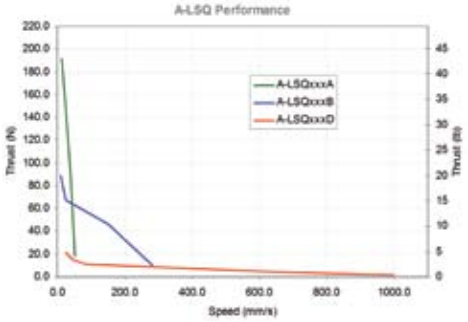
A-LSQ-E Dimensions

Measurements in millimetres (mm)





A-LSQ-E Performance Charts



A-LSQ-E Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (μm)	Minimum Speed (μm/s)	Maximum Speed (mm/s)	Maximum Centred Load (N)	Peak Thrust (N)	Weight (kg)
A-LSQ075A-E01	75	0.099	23	< 2.5	< 5	0.061	53	200	147	1.2
A-LSQ075B-E01	75	0.496	15	< 2.5	< 7	0.303	280	200	75	1.2
A-LSQ075D-E01	75	1.984	15	< 3	< 20	1.211	1000	200	18	1.2
A-LSQ150A-E01	150	0.099	45	< 2.5	< 5	0.061	53	200	147	1.4
A-LSQ150B-E01	150	0.496	15	< 2.5	< 7	0.303	280	200	75	1.4
A-LSQ150D-E01	150	1.984	15	< 3	< 20	1.211	1000	200	18	1.4
A-LSQ300A-E01	300	0.099	90	< 2.5	< 5	0.061	53	200	147	1.8
A-LSQ300B-E01	300	0.496	30	< 2.5	< 7	0.303	280	200	75	1.8
A-LSQ300D-E01	300	1.984	30	< 3	< 20	1.211	1000	200	18	1.8
A-LSQ450A-E01	450	0.099	135	< 2.5	< 5	0.061	53	200	147	2.3
A-LSQ450B-E01	450	0.496	45	< 2.5	< 7	0.303	280	200	75	2.3
A-LSQ450D-E01	450	1.984	45	< 3	< 20	1.211	1000	200	18	2.3
A-LSQ600A-E01	600	0.099	150	< 2.5	< 5	0.061	42	200	147	2.9
A-LSQ600B-E01	600	0.496	150	< 2.5	< 7	0.303	225	200	75	2.9
A-LSQ600D-E01	600	1.984	150	< 3	< 20	1.211	800	200	18	2.9

1. Complete, up-to-date specs available at www.zaber.com.
2. Faster, externally controlled versions available; more compact versions with no potentiometer available.

A-BLQ-E Closed-Loop, Belt-Driven Motorized Linear Stages

- Many travel ranges, from 70 mm to 2095 mm
- Up to 2.0 m/s speed, 20 N thrust, and 20 kg load capacity
- Encoder position feedback with slip/stall detection and automatic recovery

Product Description

Zaber's A-BLQ-E stages are computer controlled and come with integrated rotary feedback encoders. With travel lengths up to 2.1 m, and a maximum speed of 2.0 m/s, A-BLQ-E stages are perfect for rapidly positioning lighter loads over large distances. With a 20 kg load capacity, excellent torsional stiffness and 10 μm repeatability, these stages are also suitable for precisely positioning heavier loads.

Closed-Loop Operation

A-BLQ-E stages use built-in rotary encoders to provide position verification. Upon detection of any slipping or stalling, the stages report the stall and can be set to automatically recover their position. Several modes of recovery behaviour are available.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Convenient 6-pin mini-DIN cables on the stage allow for direct interconnection between devices in close proximity. For longer distances, we offer standard cable extensions.

Computer Control

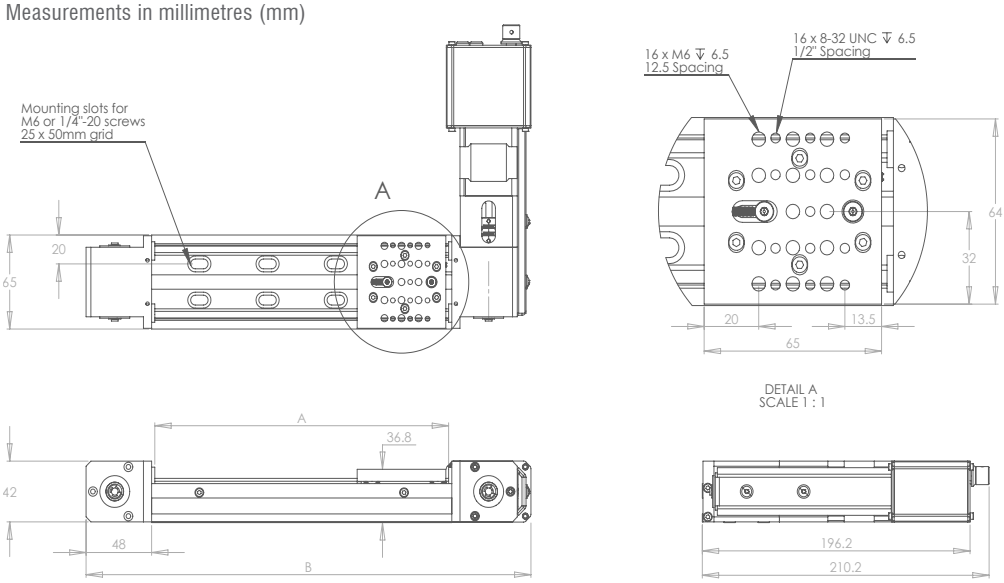
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

An indexed knob provides convenient manual control for versatile operation. During a manual move, the device's position is constantly transmitted to the computer and is displayed by the software.

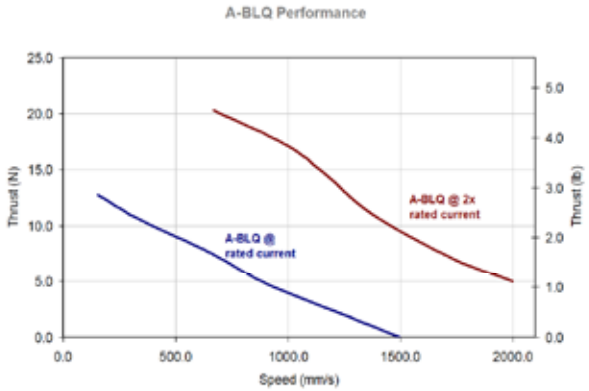
A-BLQ-E Dimensions

Measurements in millimetres (mm)



Stage	A	B
A-BLQ0070-E01	140.3	251
A-BLQ0145-E01	215.3	326
A-BLQ0295-E01	365.3	476
A-BLQ0445-E01	515.3	626
A-BLQ0595-E01	665.3	776
A-BLQ1045-E01	1117.3	1228
A-BLQ1495-E01	1567.3	1678
A-BLQ2095-E01	2167.3	2278

A-BLQ-E Performance Charts



A-BLQ-E Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (μm)	Minimum Speed (μm/s)	Maximum Speed* (m/s)	Maximum Centred Load (N)	Peak Thrust* (N)	Weight (kg)
A-BLQ0070-E01	70	4.21875	200	< 10	< 50	0.0026	1.1	200	20	1.42
A-BLQ0145-E01	145	4.21875	200	< 10	< 50	0.0026	1.6	200	20	1.58
A-BLQ0295-E01	295	4.21875	400	< 10	< 50	0.0026	2.0	200	20	1.91
A-BLQ0445-E01	445	4.21875	600	< 10	< 50	0.0026	2.0	200	20	2.20
A-BLQ0595-E01	595	4.21875	700	< 10	< 50	0.0026	2.0	200	20	2.60
A-BLQ1045-E01	1045	4.21875	1000	< 10	< 50	0.0026	2.0	200	20	3.60
A-BLQ1495-E01	1495	4.21875	1500	< 10	< 50	0.0026	2.0	200	20	4.11
A-BLQ2095-E01	2095	4.21875	2000	< 10	< 50	0.0026	2.0	200	20	5.94

* Measured at maximum running current.
1. Complete, up-to-date specs available at www.zaber.com.

A-LST High-Load Motorized Linear Stages

- Integrated motor and controller
- 100 kg load capacity and up to 1500 mm travel
- Daisy-chain and control multiple devices through a single serial port
- Ready to assemble in XY configuration

Product Description

Zaber's A-LST linear stages are computer controlled and have travel ranges from 254 mm up to 1500 mm. These stages are available with various lead screw pitches so you can select the device with the resolution and speed capability that you need. Zaber's innovative stage design is capable of speeds up to 420 mm/s and can support loads up to 100 kg. These stages are ready for assembly in XY configuration with no additional hardware required. See Multi-Axis section for more information.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Convenient 6-pin mini-DIN cables on the stage allow for direct interconnection between devices in close proximity. For longer distances, we offer standard cable extensions.

Computer Control

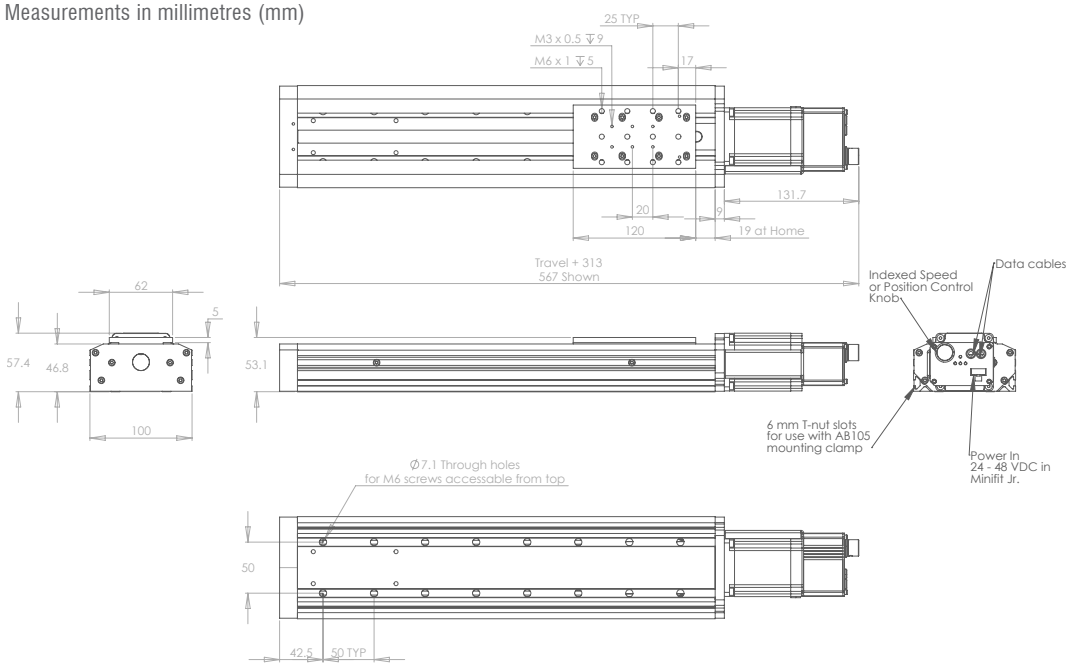
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

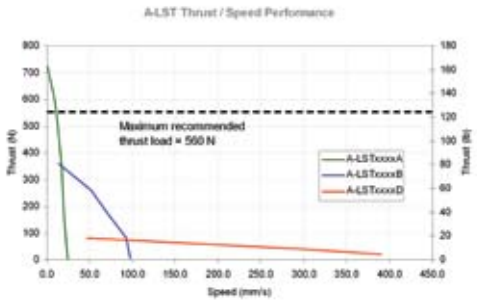
An indexed knob provides convenient manual control for versatile operation. During a manual move, the device's position is constantly transmitted to the computer and is displayed by the software.

A-LST Dimensions

Measurements in millimetres (mm)



A-LST Performance Charts



A-LST Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (µm)	Accuracy (µm)	Repeatability (µm)	Backlash (No Load) (µm)	Maximum Speed (mm/s)	Peak Thrust (N)	Maximum Centred Load (N)	Maximum Cantilever Load (N·cm)	Weight (kg)
A-LST0250A	254	0.124	63	< 2	< 5	22	700	1000	3000	4.1
A-LST0250B	254	0.496	63	< 2	< 10	100	350	1000	3000	4.1
A-LST0250D	254	1.984	63	< 2.5	< 20	420	80	1000	3000	4.1
A-LST0500A	500	0.124	125	< 2	< 5	22	700	1000	3000	5.0
A-LST0500B	500	0.496	125	< 2	< 10	100	350	1000	3000	5.0
A-LST0500D	500	1.984	125	< 2.5	< 20	420	80	1000	3000	5.0
A-LST0750A	750	0.124	188	< 2	< 5	22	700	1000	3000	5.8
A-LST0750B	750	0.496	188	< 2	< 10	100	350	1000	3000	5.8
A-LST0750D	750	1.984	188	< 2.5	< 20	420	80	1000	3000	5.8
A-LST1000A	1000	0.124	250	< 2	< 5	22	700	1000	3000	6.9
A-LST1000B	1000	0.496	250	< 2	< 10	100	350	1000	3000	6.9
A-LST1000D	1000	1.984	250	< 2.5	< 20	420	80	1000	3000	6.9
A-LST1500A	1500	0.124	375	< 2	< 5	15	700	1000	3000	9.1
A-LST1500B	1500	0.496	375	< 2	< 10	60	350	1000	3000	9.1
A-LST1500D	1500	1.984	375	< 2.5	< 20	240	80	1000	3000	9.1

1. Complete, up-to-date specs available at www.zaber.com.
2. Faster, externally controlled versions available; more compact versions with no potentiometer available.

A-LST-C High-Load Motorized Linear Stages

- Integrated motor and controller
- 100 kg load capacity and up to 1500 mm travel
- Daisy-chain and control multiple devices through a single serial port
- Ready to assemble in XY configuration

Product Description

Zaber's A-LST-C linear stages are computer controlled and have travel ranges from 254 mm up to 1500 mm. These stages are available with various lead screw pitches so you can select the device with the resolution and speed capability that you need. Zaber's innovative stage design is capable of speeds up to 385 mm/s and can support loads up to 100 kg. The flexible stainless steel dust cover protects the internal lead screw and bearings.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Convenient 6-pin mini-DIN cables on the stage allow for direct interconnection between devices in close proximity. For longer distances, we offer standard cable extensions.

Computer Control

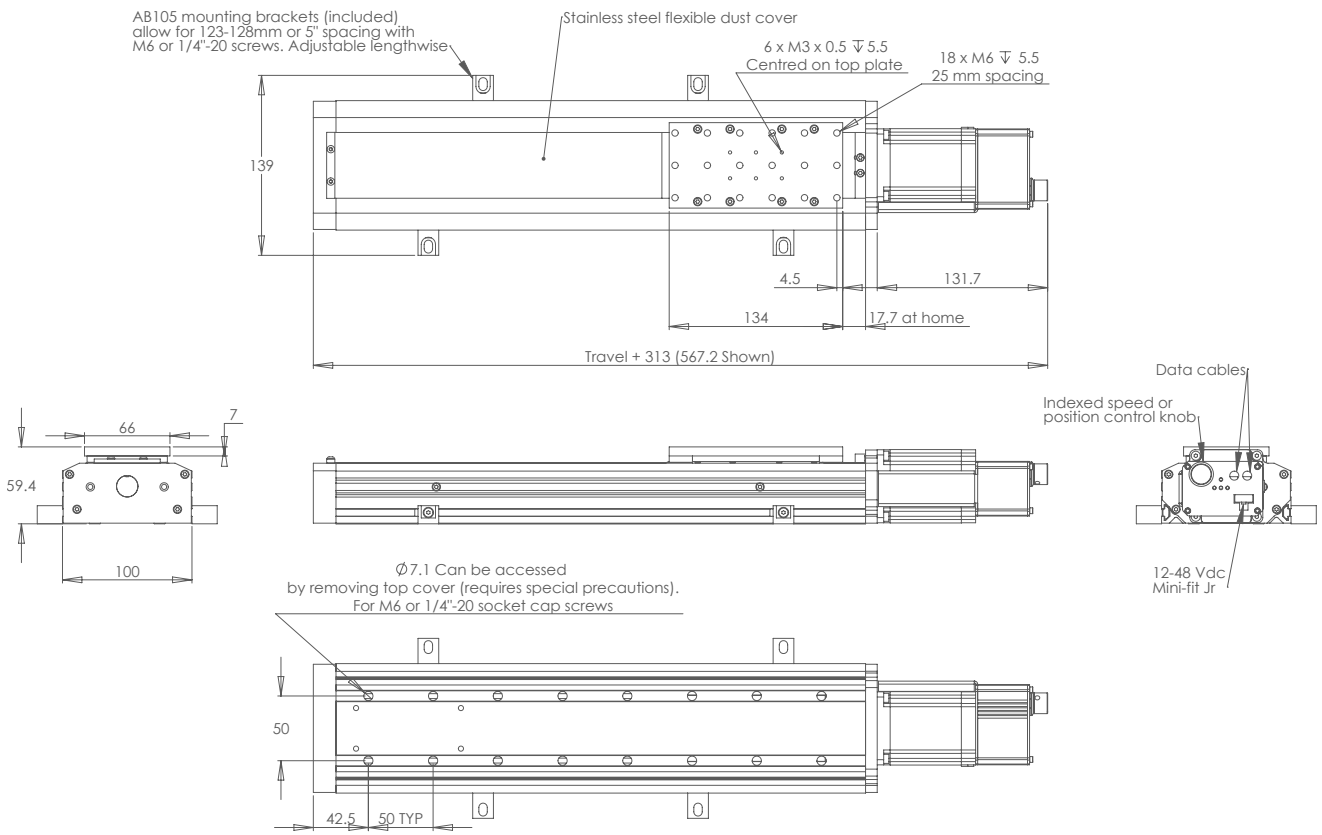
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

An indexed knob provides convenient manual control for versatile operation. During a manual move, the device's position is constantly transmitted to the computer and is displayed by the software.

A-LST-C Dimensions

Measurements in millimetres (mm)



A-LST-C Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (No Load) (μm)	Maximum Speed (mm/s)	Peak Thrust (N)	Maximum Centred Load (N)	Maximum Cantilever Load (N·cm)	Weight (kg)
A-LST0250A-C	254	0.124	63	< 2	< 5	22	700	1000	3000	4.3
A-LST0250B-C	254	0.496	63	< 2	< 10	95	350	1000	3000	4.3
A-LST0250D-C	254	1.984	63	< 2.5	< 20	385	80	1000	3000	4.3
A-LST0500A-C	500	0.124	125	< 2	< 5	22	700	1000	3000	5.2
A-LST0500B-C	500	0.496	125	< 2	< 10	95	350	1000	3000	5.2
A-LST0500D-C	500	1.984	125	< 2.5	< 20	385	80	1000	3000	5.2
A-LST0750A-C	750	0.124	188	< 2	< 5	22	700	1000	3000	6.1
A-LST0750B-C	750	0.496	188	< 2	< 10	95	350	1000	3000	6.1
A-LST0750D-C	750	1.984	188	< 2.5	< 20	385	80	1000	3000	6.1
A-LST1000A-C	1000	0.124	250	< 2	< 5	22	700	1000	3000	7.1
A-LST1000B-C	1000	0.496	250	< 2	< 10	95	350	1000	3000	7.1
A-LST1000D-C	1000	1.984	250	< 2.5	< 20	385	80	1000	3000	7.1
A-LST1500A-C	1500	0.124	375	< 2	< 5	15	700	1000	3000	9.3
A-LST1500B-C	1500	0.496	375	< 2	< 10	60	350	1000	3000	9.3
A-LST1500D-C	1500	1.984	375	< 2.5	< 20	240	80	1000	3000	9.3

1. Complete, up-to-date specs available at www.zaber.com.
2. Faster, externally controlled versions available; more compact versions with no potentiometer available.

A-LST-E Closed-Loop Motorized Linear Stages

- Integrated motor, encoder, and controller
- Encoder position feedback with slip/stall detection and automatic recovery
- Up to 420 mm/s travel speed and thrust up to 560 N
- Ready to assemble in XY configuration

Product Description

Zaber's A-LST-E high-load, motorized stages are computer controlled with integrated controllers. Travel options range from 254 mm up to 1500 mm. A built-in encoder allows closed-loop operation and slip/stall recovery features. Zaber's innovative stage design is capable of speeds up to 420 mm/s and can support loads up to 100 kg and cantilever loads up to 3000 N·cm.

Closed-Loop Operation

A-LST-E stages use built-in rotary encoders to provide position verification. Upon detection of any slipping or stalling, the stages report the stall and can be set to automatically recover their position. Several modes of recovery behaviour are available.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port.

Computer Control

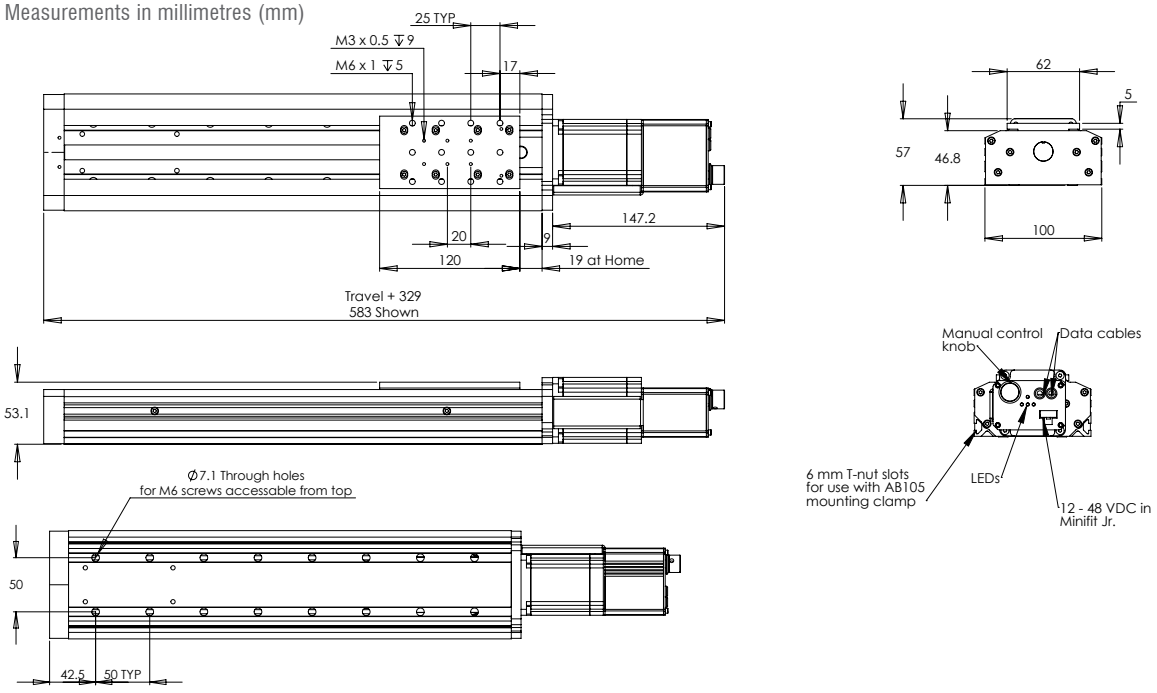
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

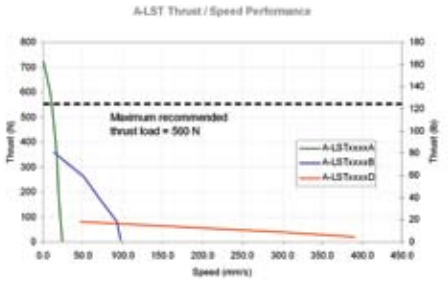
An indexed knob provides convenient manual control for versatile operation. During a manual move, the device's position is constantly transmitted to the computer and is displayed by the software.

A-LST-E Dimensions

Measurements in millimetres (mm)



A-LST-E Performance Charts



A-LST-E Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (No Load) (μm)	Maximum Speed (mm/s)	Peak Thrust (N)	Maximum Centred Load (N)	Maximum Cantilever Load (N·cm)	Weight (kg)
A-LST0250A-E01	254	0.124	63	< 2	< 5	22	700	1000	3000	3.6
A-LST0250B-E01	254	0.496	63	< 2	< 10	100	350	1000	3000	3.6
A-LST0250D-E01	254	1.984	63	< 2.5	< 20	420	80	1000	3000	3.6
A-LST0500A-E01	500	0.124	125	< 2	< 5	22	700	1000	3000	4.7
A-LST0500B-E01	500	0.496	125	< 2	< 10	100	350	1000	3000	4.7
A-LST0500D-E01	500	1.984	125	< 2.5	< 20	420	80	1000	3000	4.7
A-LST0750A-E01	750	0.124	188	< 2	< 5	22	700	1000	3000	5.8
A-LST0750B-E01	750	0.496	188	< 2	< 10	100	350	1000	3000	5.8
A-LST0750D-E01	750	1.984	188	< 2.5	< 20	420	80	1000	3000	5.8
A-LST1000A-E01	1000	0.124	250	< 2	< 5	22	700	1000	3000	6.9
A-LST1000B-E01	1000	0.496	250	< 2	< 10	100	260	1000	3000	6.9
A-LST1000D-E01	1000	1.984	250	< 2.5	< 20	420	80	1000	3000	6.9
A-LST1500A-E01	1500	0.124	375	< 2	< 5	15	700	1000	3000	9.1
A-LST1500B-E01	1500	0.496	375	< 2	< 10	60	350	1000	3000	9.1
A-LST1500D-E01	1500	1.984	375	< 2.5	< 20	240	80	1000	3000	9.1

1. Complete, up-to-date specs available at www.zaber.com.
2. Faster, externally controlled versions available; more compact versions with no potentiometer available.

VSR Vertical Lift Stage

- 20 mm of travel
- 10 kg load capacity
- 20 kg peak thrust
- Up to 48 mm/s speed
- 55 mm retracted height

Product Description

Zaber's VSR vertical lift stage is a stepper actuator driven platform capable of moving a 10 kg load. It delivers exceptional travel and load capacity for its compact size, measuring only 55 mm tall when closed. Its small footprint also allows it to mount directly onto Zaber's LST and LSQ Series of linear stages. The VSR stage is designed for plug-and-play use with Zaber's stepper motor controllers.

Installation

The VSR can mount to any standard optical breadboard with 1 inch or 25 mm spacing. A DB-15 cable connects the VSR to any standalone Zaber controller. Zaber's standalone controllers and devices with built-in controllers can all be daisy-chained to communicate over a single computer connection. This simplifies set-up and reduces cable clutter.

Computer Control

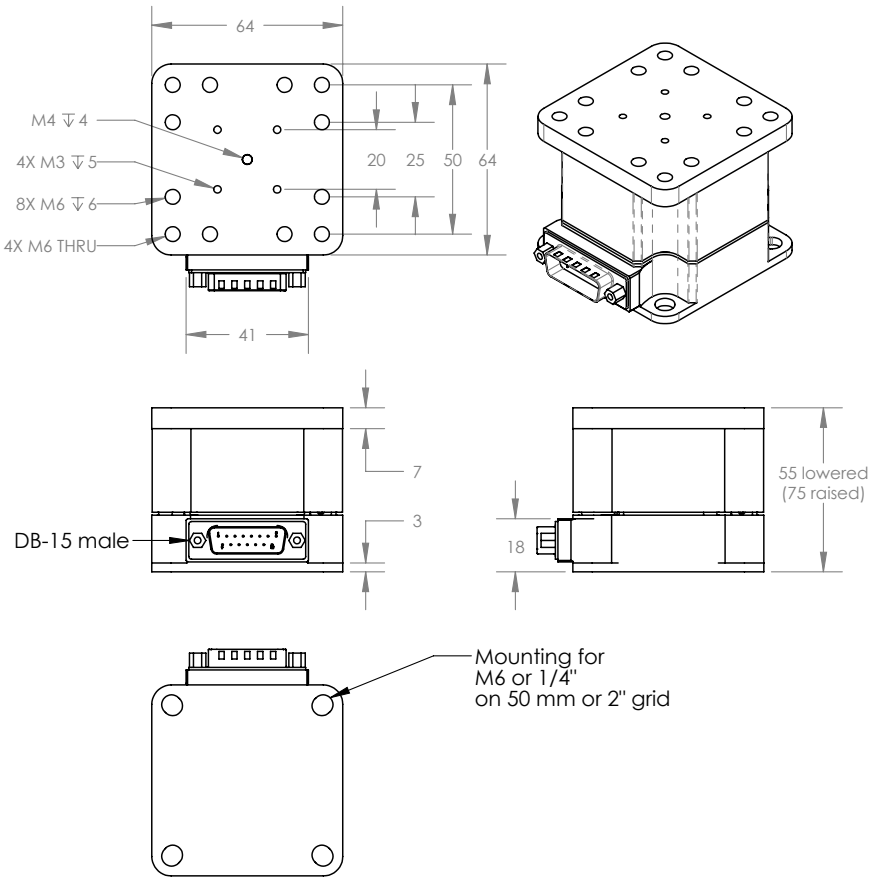
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

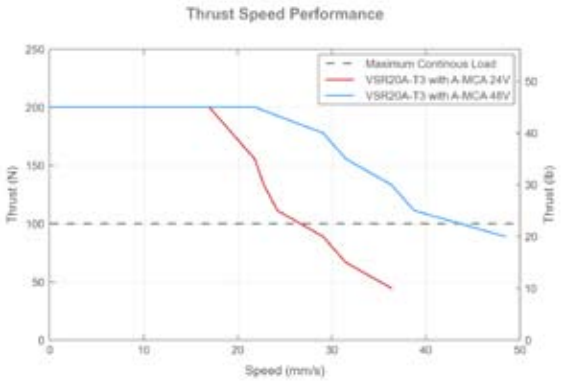
Zaber's stepper motor controllers include an indexed knob that permits smooth manual control at variable speeds in both directions. During a manual move the stage's position is constantly transmitted to the computer and is displayed by the software. The knob allows you to use each stage even without a computer.

VSR Dimensions

Measurements in millimetres (mm)



VSR Performance Charts



VSR Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (No Load)(μm)	Maximum Speed (mm/s)	Peak Thrust (N)	Maximum Continuous Thrust (N)	Weight (kg)
VSR20A-T3	20	0.095	35	< 1	< 35	48	200	100	0.55

1. Complete, up-to-date specs available at www.zaber.com.

TSB Manual Translation Stages

- Compatible with Zaber's manual micrometers and T-NA, T-LA, and NA11 actuators
- Available with a manual micrometer head
- Reversible mounting bracket allows left-hand or right-hand operation
- Brackets have a convenient clamping mechanism for easy adjustments

Product Description

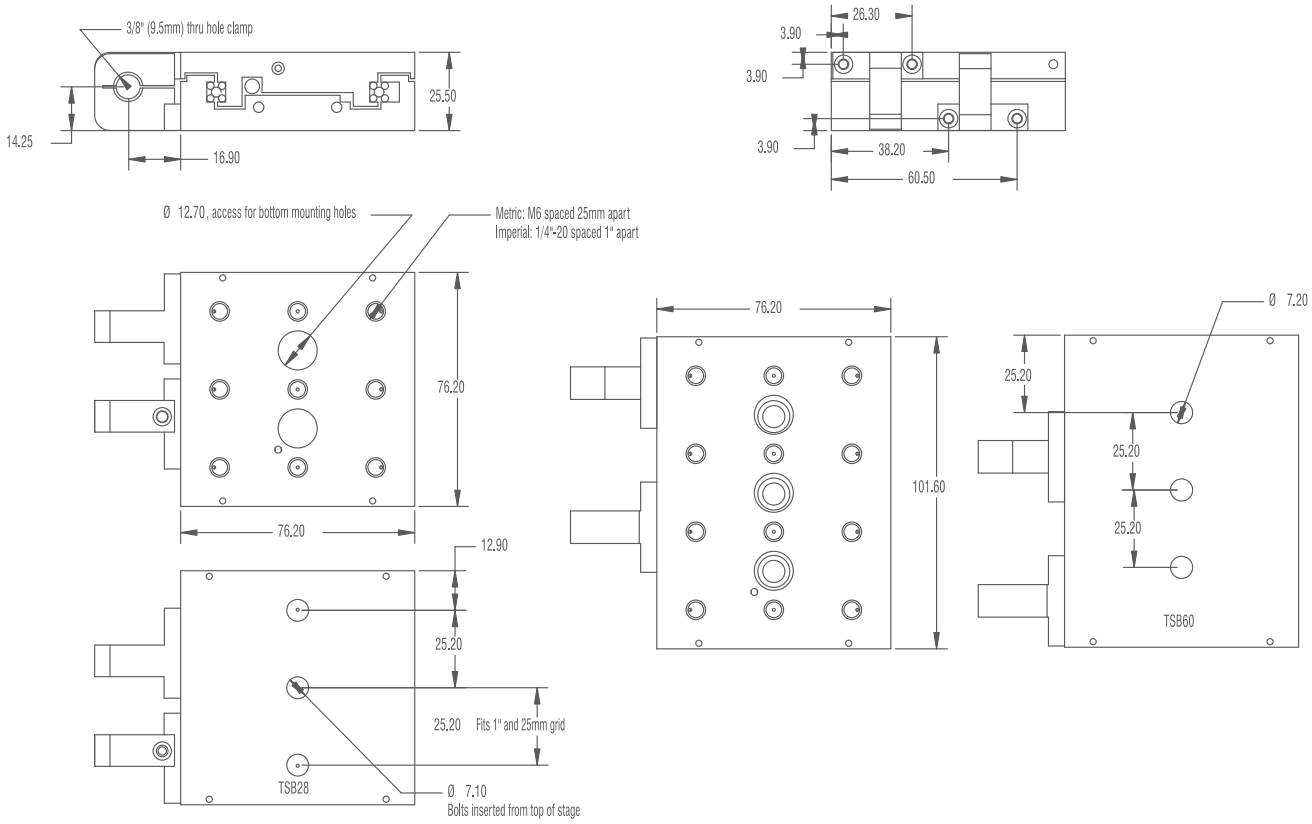
Zaber's TSB ball bearing translation stages without manual micrometer heads are available in two sizes, offering either 28 mm or 60 mm of travel. The versions with manual micrometer heads are also available in two sizes, offering either 25 mm or 50 mm of travel and 0.01 mm resolution. The TSB translation stages can be mounted directly in XY configuration, or in XYZ configuration with an angle bracket. TSB stages ensure smooth and accurate motion: they are made from precision-machined anodized aluminum, with precision-ground rails and ball bearings. Choose from either metric M6 mounting holes on 25 mm spacing, or imperial 1/4″-20 mounting holes on 1″ spacing.

Installation

Each stage includes a pair of actuator mounting brackets that include a convenient clamping mechanism to grip actuators, and are easily adjusted or locked in place. The mounting brackets are compatible with Zaber actuators: the standard 9.5 mm brackets fit our T-NA and T-LA series of actuators; if you want to use our NA11 actuators, we offer optional 14 mm brackets. TSB stages can be mounted directly in XY configuration. Optional AB90 angle brackets are available for mounting in XYZ configuration. The TSB28x-MH25 and TSB60x-MH50 stages come with the appropriate mounting bracket and a manual micrometer head.

TSB Dimensions

Measurements in millimetres (mm)



TSB Specifications

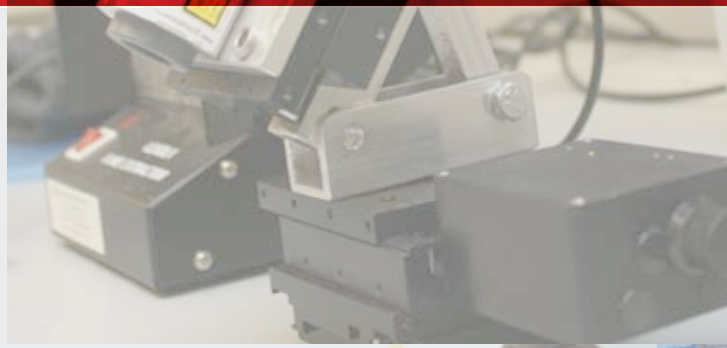
Model	Travel Range (mm)	Maximum Centred Load (N)	Maximum Cantilever Load (N·cm)	Stage Parallelism (µm)	Manual Micrometer Head	Mounting Thread
TSB28E	28	100	125	< 100	No	1/4″-20
TSB28E-MH25	25	100	125	< 100	Yes	1/4″-20
TSB28M	28	100	125	< 100	No	M6
TSB28M-MH25	25	100	125	< 100	Yes	M6
TSB60E	60	100	125	< 100	No	1/4″-20
TSB60E-MH50	50	100	125	< 100	Yes	1/4″-20
TSB60M	60	100	125	< 100	No	M6
TSB60M-MH50	50	100	125	< 100	Yes	M6

1. Complete, up-to-date specs available at www.zaber.com.

I'm constantly impressed, surprised, and intrigued by the variety of applications our customers employ our motion products in. It's rewarding to work together with them to find the perfect solution for their requirements, and to see the end result of these projects. With new products constantly being developed by our team of engineers, it's exciting to see the growing range of requirements we can satisfy.

– Mike McDonald, Sales and Support

Sponsorship Spotlight: UW_NRG



University of Waterloo Nanorobotics Group

The University of Waterloo Nanorobotics Group (UW_NRG) is an undergraduate student group focused on the research and development of cutting-edge micro-scale manipulation technology. Formed in 2007, its members come from a range of disciplines, including Nanotechnology, Electrical, Computer, and Software Engineering, and work together on the design, simulation, and fabrication of small MEMS components. The group participates annually in various competitive events and presents at numerous technical seminars, conferences, and community outreach events to build awareness of nanotechnology.

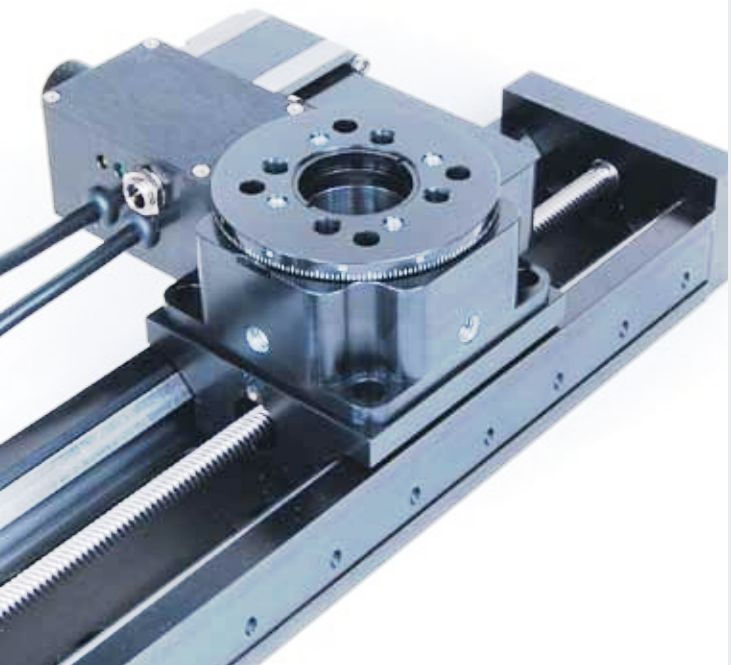
http://csclub.uwaterloo.ca/~uwnrg/

The UW_NRG group is currently using Zaber's stages with built-in controllers and drivers in their research. They compete annually in the Mobile Microrobotics Challenge at the International Conference on Robotics and Automation (ICRA).

After a successful year of hard work, UW_NRG utilized our latest rendition of EMMA to take home first place at the 2013 International Conference on Robotics and Automation in Karlsruhe, Germany.

– UW_NRG

Rotary Motion



T-RSW Motorized Rotary Stages

- Continuous 360° rotation stage with built-in controller
- Two lens holders allow for use as a polarizer mount
- Speed up to 8 rpm, torque up to 70 N·cm, resolution down to 0.00023°
- Through-hole for 1″ optics

Product Description

Zaber's T-RSW rotary stages provide precise, continuous 360° rotation in a compact package. The robust bearing design allows the stage to handle up to 20 kg (44 lb) of load. Two options for worm gear ratios provide resolutions of 0.00023° or 0.00092°. The built-in controller makes set-up a snap: just connect the stage to a computer, and it is ready to use.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Convenient 6-pin mini-DIN cables on the stage allow for direct interconnection between devices in close proximity. For longer distances, we offer standard cable extensions.

Computer Control

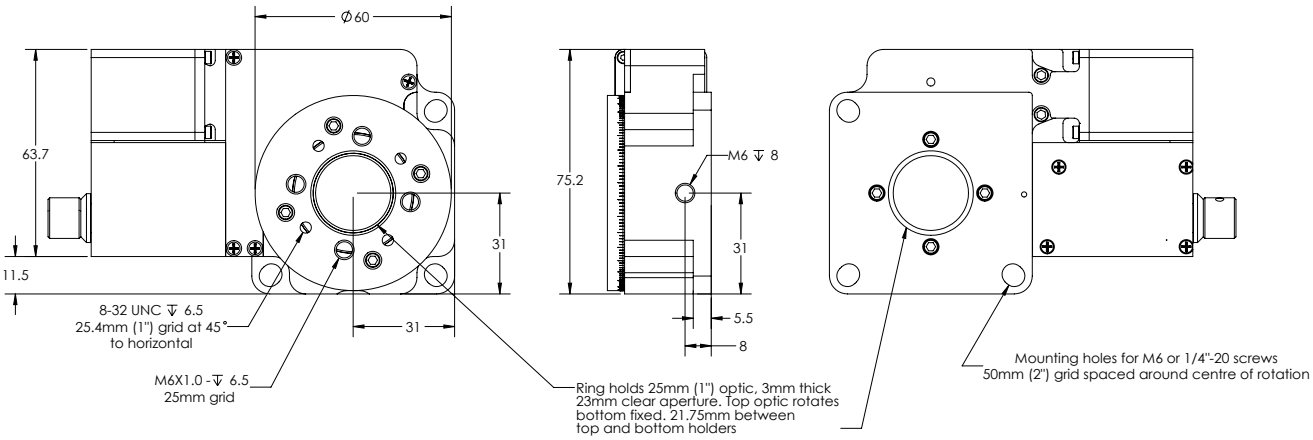
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

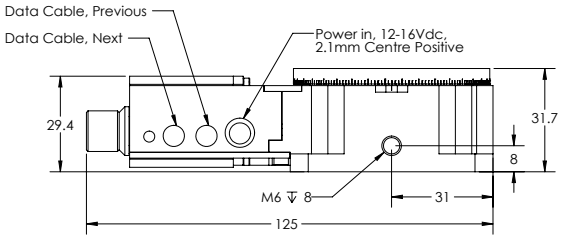
Manual Control

An optional knob provides smooth manual control at variable speeds in both directions for versatile operation. During a manual move the device's position is constantly transmitted to the computer and is displayed by the software.

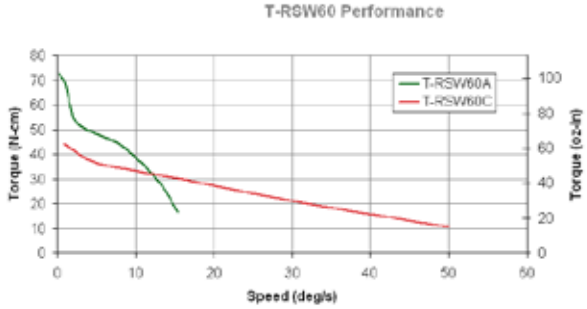
T-RSW Dimensions

Measurements in millimetres (mm)





T-RSW Performance Charts



T-RSW Specifications

Model*	Microstep Size (Resolution) (°)	Maximum Centred Load (N)	Accuracy (°)	Repeatability (°)	Backlash (°)	Minimum Speed (°/s)	Maximum Speed (rpm)	Maximum Torque (N·cm)	Weight (kg)
T-RSW60A	0.00023	200	0.14	< 0.02	< 0.08	0.0011	2.2	70	0.52
T-RSW60C	0.00094	200	0.14	< 0.02	< 0.08	0.0044	8.0	45	0.52

*Faster, externally controlled rotary stages available.
1. Complete, up-to-date specs available at www.zaber.com.

RSB Motorized Rotary Stages

- Continuous 360° rotation stage
- Capable of speeds up to 300 RPM
- 2” Aperture
- Multiple motor configurations

Product Description

Zaber’s RSB motorized rotary stages have a 120 mm table diameter and a 50.8 mm aperture. They also feature a compact footprint, low profile, and a load capability of up to 20 kg. With a maximum rotational speed of 300 rpm, the RSB stages are ideal for the rapid positioning of light loads. The RSB stage is designed for plug-and-play use with any of Zaber’s stepper motor controllers.

Installation

The RSB can mount to any standard optical breadboard with 1 inch or 25 mm spacing. A DB-15 cable connects the RSB to any standalone Zaber controller. Zaber’s standalone controllers and devices with built-in controllers can all be daisy-chained to communicate over a single computer connection. This simplifies set-up and reduces cable clutter.

Computer Control

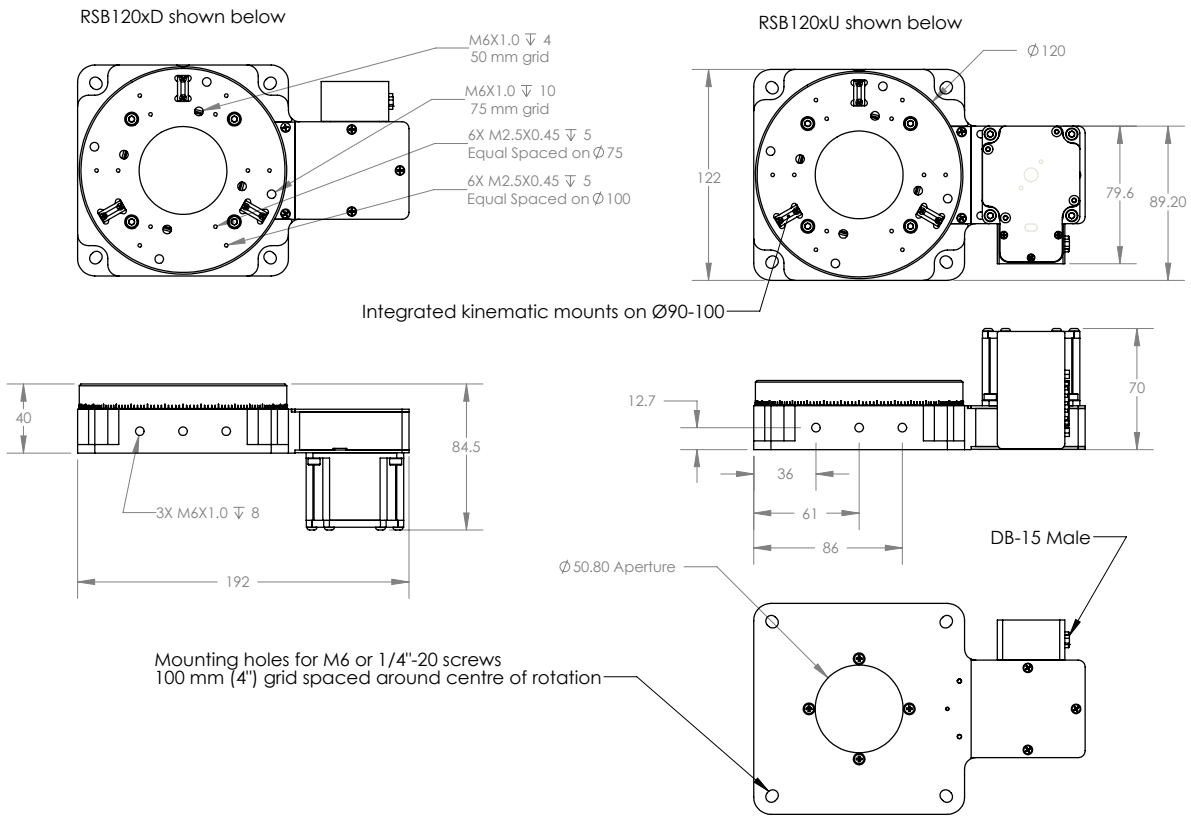
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like “move absolute”), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

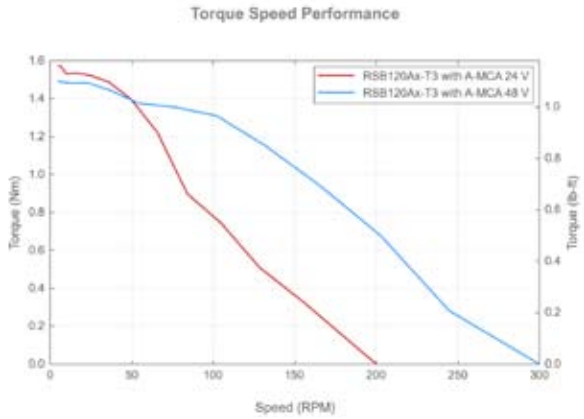
Zaber’s stepper motor controllers include an indexed knob that permits smooth manual control at variable speeds in both directions. During a manual move the stage’s position is constantly transmitted to the computer and is displayed by the software. The knob allows you to use each stage even without a computer.

RSB Dimensions

Measurements in millimetres (mm)



RSB Performance Charts



RSB Specifications

Model	Microstep Size (Resolution) (°)	Maximum Centred Load (N)	Accuracy (°)	Repeatability (°)	Backlash (°)	Minimum Speed (°/s)	Maximum Speed (rpm)	Maximum Torque (N·cm)	Weight (kg)
RSB120AU-T3	0.0056	196	0.35	< 0.03	< 0.09	0.026	300	140	2.0
RSB120AD-T3	0.0056	196	0.35	< 0.03	< 0.09	0.026	300	140	2.0

1. Complete, up-to-date specs available at www.zaber.com.

T-NM Stepper Motors with Built-in Controllers

- Integrated motor and controller
- Home sensor and small magnet included
- Manual control knob lets you move the stepper motor at variable speeds
- Daisy-chain and control multiple devices through a single serial port

Product Description

Zaber's T-NM stepper motors are computer controlled and have 0.028° resolution. The stepper motor is matched to the built-in controller, so there's no need to fiddle with parameters. A detachable home sensor and small magnet are included.

Installation

One or more T-NM devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port.

Computer Control

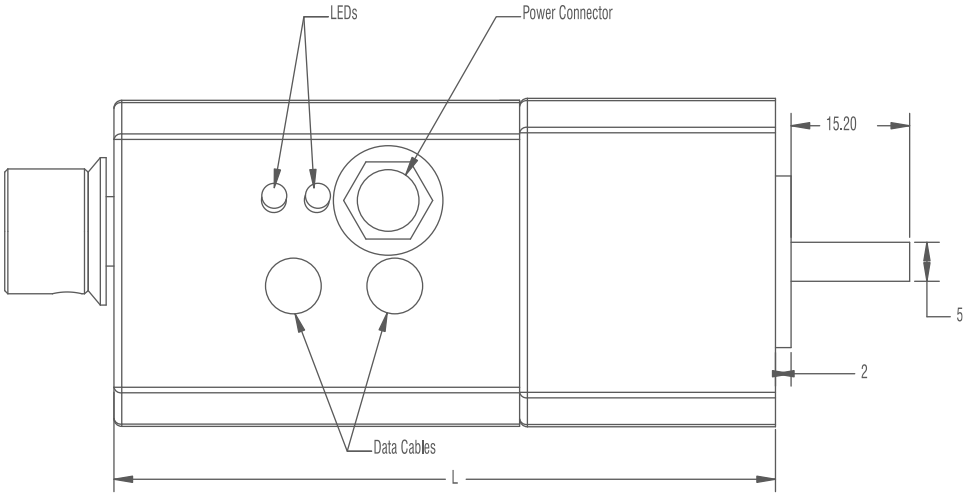
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the device reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

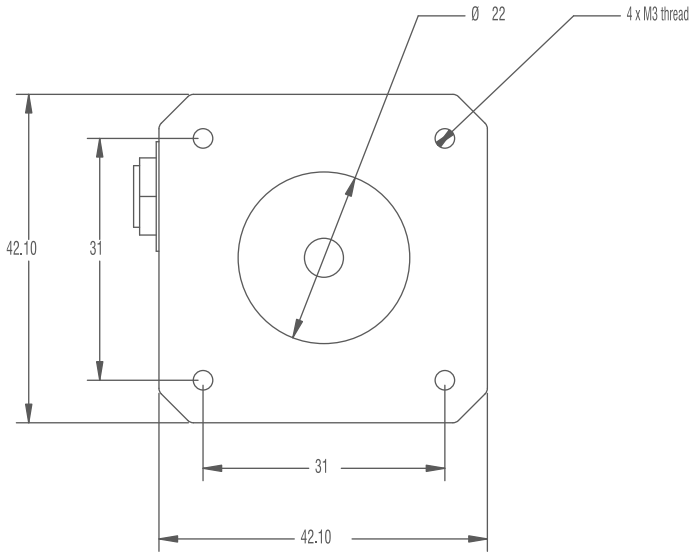
Manual Control

An optional knob provides smooth manual control at variable speeds in both directions for versatile operation. During a manual move the device's position is constantly transmitted to the computer and is displayed by the software.

T-NM Dimensions

Measurements in millimetres (mm)





Model	L (mm)
T-NM17A	84.8
T-NM17C	99

T-NM Specifications

Model	Microstep Size (Resolution) (°)	Accuracy (°)	Repeatability (°)	Minimum Speed (°/s)	Maximum Speed (rpm)	Maximum Torque (N·cm)	Weight (kg)
T-NM17A04	0.0281	0.25	< 0.1	0.264	180	20.6	0.31
T-NM17A04-S	0.0281	0.25	< 0.1	0.264	180	20.6	0.31
T-NM17C04	0.0281	0.25	< 0.1	0.264	180	31.4	0.40
T-NM17C04-S	0.0281	0.25	< 0.1	0.264	180	31.4	0.40

1. Complete, up-to-date specs available at www.zaber.com.

- Available in several sizes for various torques and speeds with single or double shaft
- Resolution down to 0.028°
- Designed for use with Zaber's stepper motor controllers
- Detachable home sensor and small magnet included

NM Stepper Motors

Product Description

Zaber's NM stepper motors offer a wide range of size, torque, and speed options not available in our motors with built-in controllers. A detachable home sensor and small magnet are included with each motor.

Installation

The NM series motors are designed to connect directly to Zaber's stepper motor controllers (purchased separately). Zaber's standalone controllers and devices with built-in controllers can all be daisy-chained to communicate over a single computer connection. This simplifies set-up and reduces cable clutter.

Computer Control

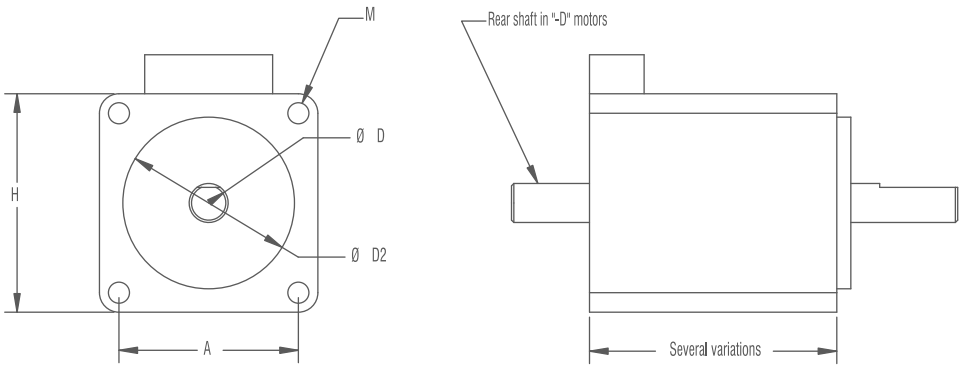
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the controller reports the new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

Zaber's stepper motor controllers include an indexed knob that permits smooth manual control at variable speeds in both directions. During a manual move the stage's position is constantly transmitted to the computer and is displayed by the software. The knob allows you to use these motors even without a computer.

NM Dimensions

Measurements in millimetres (mm)



Series	H (mm)	A (mm)	D (mm)	D2 (mm)	M
NM08	20	16	4	15	M2 thread
NM11	28	23	5	22	M2.5 thread
NM17	42.2	31	5	22	#4-40 thread
NM23	56.4	47.1	6.36	38.1	4.75 mm hole
NM34	85	69.6	12.7	73	6.5 mm hole

NM Specifications

Series*	Microstep Size (Resolution) (°)	Minimum Speed (°/s)	Maximum Speed (rpm)	Maximum Torque (N·cm)	Current Rating (mA/phase)	Weight (kg)
NM08	0.0281	0.1318	Up to 2430	Up to 2.8	Up to 800	Up to 0.12
NM11	0.0281	0.1318	Up to 2430	Up to 12	Up to 670	Up to 0.28
NM17	0.0281	0.1318	Up to 2430	Up to 32	Up to 850	Up to 0.38
NM23	0.0281	0.1318	Up to 1340	Up to 135	Up to 710	Up to 1.08
NM34	0.0281	0.1318	Up to 1090	Up to 390	Up to 1400	Up to 4.00

*Due to the large number of NM models available, this table shows data for each series rather than for individual models. Complete, up-to-date specs available at www.zaber.com.

My favourite part about working at Zaber is that everyone is very open-minded, supportive, and knowledgeable. While working on my Master of Business Administration (MBA) degree, I was frequently required to do assignments on my workplace. During that time, it was great to be able to approach my colleagues with ideas and questions about the company and our industry. Working with people who really supported my decision to further my studies made the whole process a lot more rewarding.

– Bryan Cassidy, Sales and Marketing

Customer Spotlight: DigitalCameraInfo.com

DigitalCameraInfo.com

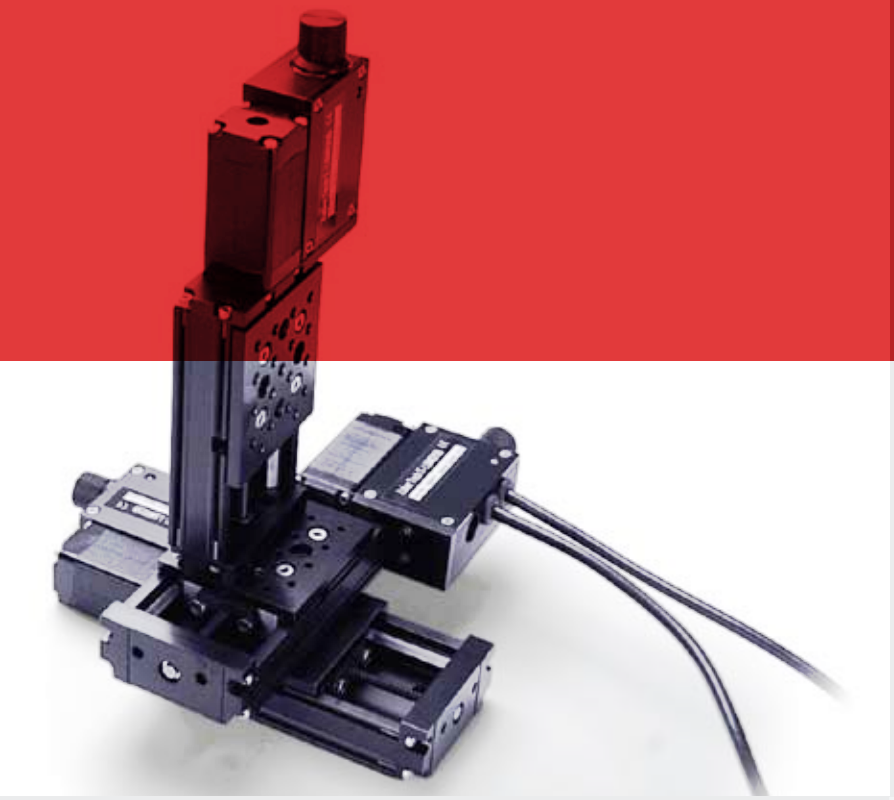
DigitalCameraInfo.com features free, fun, and unbiased reviews to help people decide which digital camera would be best for them. Each DigitalCameraInfo.com review features a standard 44-point analysis that considers the camera's image quality, handling, portability, control, ease of use, and other key areas. DigitalCameraInfo.com uses Zaber devices to test digital cameras and camcorders.

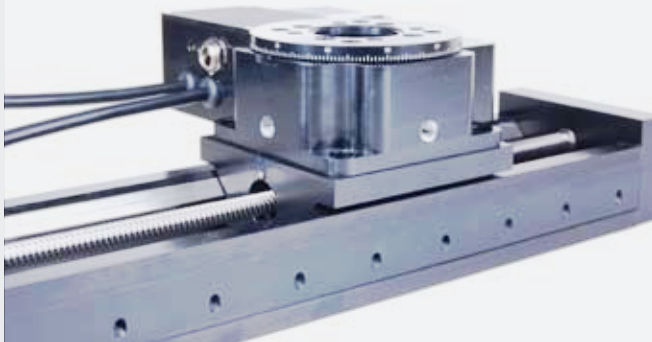
www.digitalcamerainfo.com

To test image stabilization, we use a T-LSR075A linear slide and a T-RS60C rotary stage, produced by the Canadian company Zaber. We mount the cameras and camcorders on these stands using a standard tripod mount. These devices allow us to apply shake to cameras and camcorders in a precisely controlled way, meaning that we can mimic human hand shake without the unpredictable nature of real humans. We use a custom Zaber script to control these devices to produce the required levels of movement to accurately mimic human hand shake.

– DigitalCameraInfo.com

Multi-Axis





XY Two-Axis Stages with Built-in Controllers

- From 13 mm up to 1500 mm travel per axis
- Integrated motors and controllers
- Daisy-chain and control multiple devices through a single serial port

Product Description

Zaber's stages can be assembled into many different configurations of XY, XYZ, and XYZ/rotation. You can select your own combination of product family, travel, and lead screw pitch in each axis to build the system you need. We ship multi-axis stages un-assembled to prevent damage to the moving parts. Please refer to the individual product family web pages for specifications.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Convenient 6-pin mini-DIN cables on each stage allow for direct interconnection between devices in close proximity. For longer distances, we offer standard cable extensions.

Computer Control

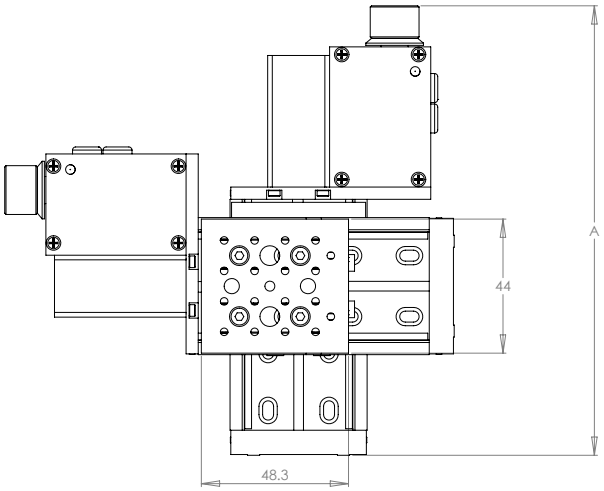
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

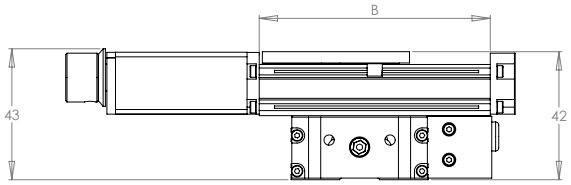
Manual Control

Optional knobs provides smooth manual control at variable speeds in both directions for versatile operation. During a manual move the device's position is constantly transmitted to the computer and is displayed by the software.

XY Dimensions

Measurements in millimetres (mm)





Model Number	A	B
T-XY-LSM025	147.5	75.8
T-XY-LSM050	172.9	101.2
T-XY-LSM100	223.7	152.0
T-XY-LSM150	274.5	202.8
T-XY-LSM200	325.3	253.6

* Subtract 13.5 mm knob length from 'A' for -S versions without manual control

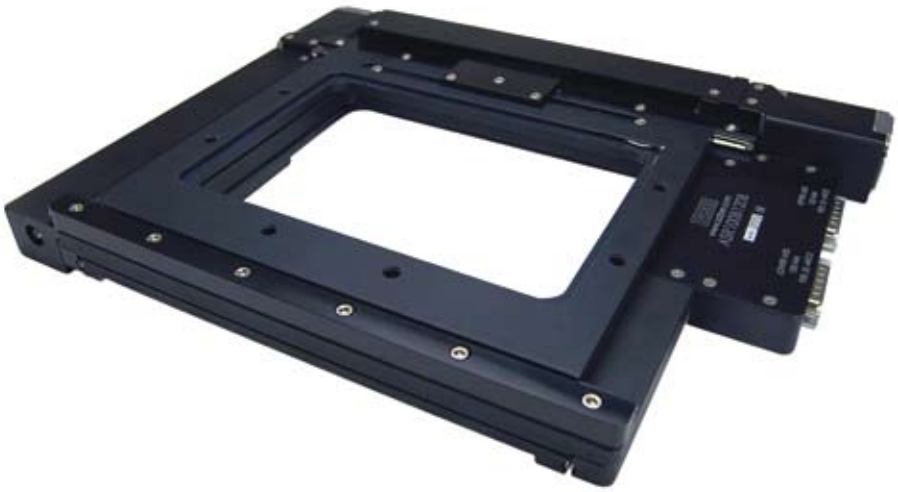
Multi-Axis Systems: XY Series*

Zaber's XY systems are made up of two linear stages. They come packaged with all the accessories you will need to operate them in XY configuration. The stages in the XY series are powered by a standard power supply and connect to the RS-232 port of any computer.

*Complete, up-to-date specs available at www.zaber.com.

Thank you for all your help so far; it has been very satisfying. Your helpfulness and good service is one of the reasons we chose Zaber as an XY-table supplier for our project.

– Alexander E. Hansen, Student at the Faculty of Technology, Sør-Trøndelag University College



ASR Motorized XY Microscope Stages

- 12 μm full-travel accuracy; 2 μm repeatability
- Low profile: 42 mm overall height
- 85 mm/s speed; 100 x 120 mm travel
- Available with built-in rotary encoders
- Designed for use with Zaber's stepper motor controllers

Product Description

Zaber's ASR Series stages are designed as replacements for manual stages on upright and inverted microscopes or for stand-alone operation as scanning stages. The extremely low profile and small footprint of ASR stages allow them to be incorporated into many different types of scanning systems and easily mounted to most common microscope platforms. Stage movement is handled by crossed roller bearings and hardened stainless steel rails, resulting in excellent smoothness, longevity, and stiffness. Versions with built-in encoders allow for closed-loop operation and slip/stall recovery features.

Installation

The ASR Series microscope stages are designed to connect directly to Zaber's stepper motor controllers (purchased separately). Zaber's controllers and devices with built-in controllers can all be daisy-chained to communicate over a single computer connection. This simplifies set-up and reduces cable clutter.

Computer Control

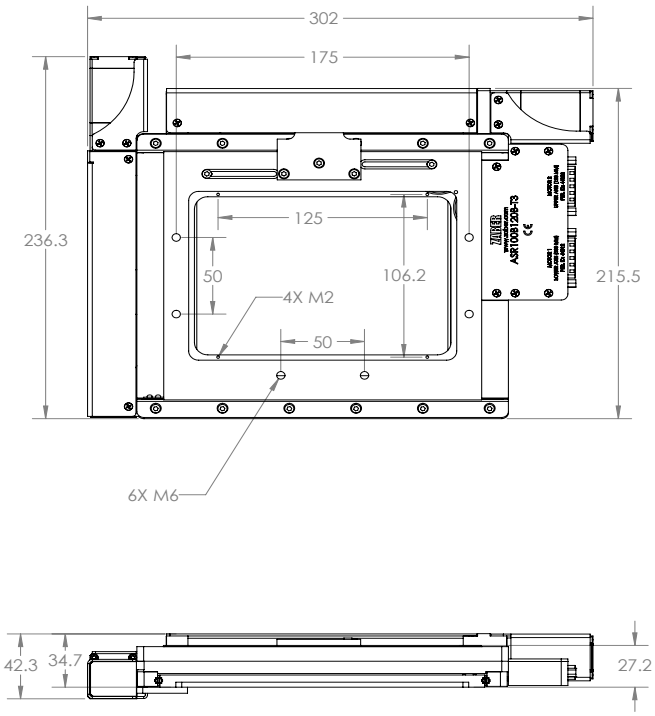
Our free Zaber Console software allows you to easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. The ASR and ASR-E also work with MetaMorph and Micro-Manager, which are both microscopy automation and image analysis software.

Manual Control

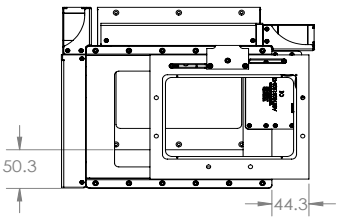
Zaber's controllers include convenient knobs that permit smooth manual control. During a manual move the stage's position is constantly transmitted to the computer and is displayed by the software. The knob allows you to use the stage even without a computer.

ASR Dimensions

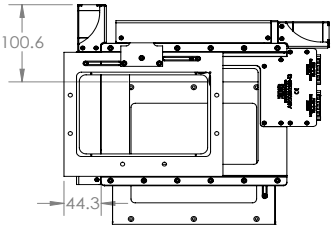
Measurements in millimetres (mm)



Minimum Travel Position



Maximum Travel Position



1. Adaptor plates required for mounting in most applications.

ASR Specifications

Model	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (μm)	Minimum Speed (μm/s)	Maximum Speed (mm/s)	Peak Thrust (N)	Weight (kg)
ASR100B120B-T3	0.1563	12	< 2	< 4	0.095	85	95	3

1. Complete, up-to-date specs available at www.zaber.com.

Customization is the best part of my job, as it is extremely stimulating. I always feel that anything is possible with our capabilities of changing any part of the software, electronics, or hardware. Client requirements can vary greatly, from custom brackets and cabling to different stage lengths, and having the ability to consult rapidly with the product design engineers and production team allows us to meet many of those requirements. For example, sometimes stages need to be redesigned to fit within tight spaces, while other times we will have to design a complete custom stage to fit an OEM's needs.

– Frank van Vuuren, Research and Development

XYZ Three-Axis Stages with Built-in Controllers

- From 13 mm up to 450 mm travel per axis
- Integrated motors and controllers
- Daisy-chain and control multiple devices through a single serial port

Product Description

Zaber's stages can be assembled into many different configurations of XY, XYZ, and XYZ/rotation. You can select your own combination of product family, travel, and lead screw pitch in each axis to build the system you need. We ship multiple stages un-assembled to avoid damage to the moving parts. Please refer to the individual product family web pages for specifications.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Convenient 6-pin mini-DIN cables on each stage allow for direct interconnection between devices in close proximity. For longer distances, we offer standard cable extensions.

Computer Control

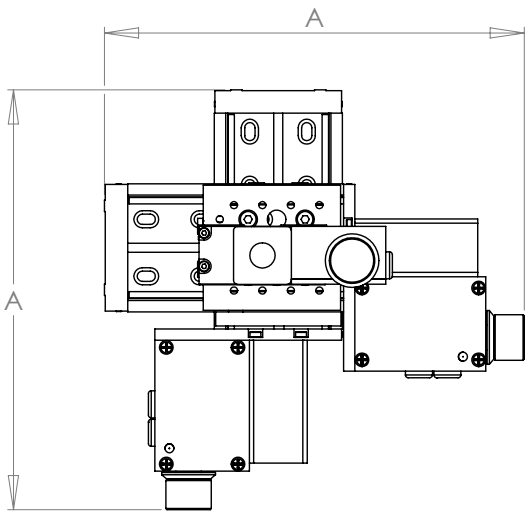
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

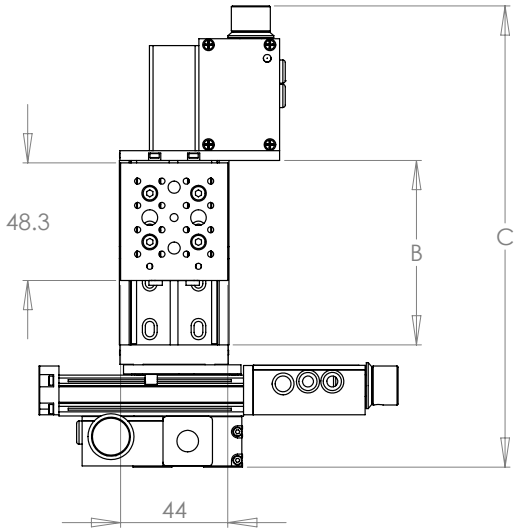
Manual Control

Optional knobs provides smooth manual control at variable speeds in both directions for versatile operation. During a manual move the device's position is constantly transmitted to the computer and is displayed by the software.

XYZ Dimensions

Measurements in millimetres (mm)





Model Number	A	B	C
T-XYZ-LSM025	147.5	75.8	189.5
T-XYZ-LSM050	172.9	101.2	214.9
T-XYZ-LSM100	223.7	152.0	265.7
T-XYZ-LSM150	274.5	202.8	316.5
T-XYZ-LSM200	325.3	253.6	367.3

* Subtract 13.5 mm knob length from 'A' and 'C' for -S versions without manual control

Multi-Axis Systems: XYZ Series*

Zaber's XYZ systems are made up of three linear stages. They come packaged with all the accessories you will need to operate them in XYZ configuration. The stages in the XYZ series are powered by a standard power supply and connect to the RS-232 port of any computer.

*Complete, up-to-date specs available at www.zaber.com.

I must say that zaber.com has the best information I've ever seen from a company selling research equipment. It's really nice that you supply all the source code and clear specification of how to communicate with the devices.

– Hjalmar Turesson, Post-Doctoral Student, Rutgers State University, Newark Campus

M-LSM Motorized Micromanipulators

- 25 mm travel XYZ with resolution finer than 0.05 μm
- 0.5 kg load capacity
- Adjustable probe holder
- Plug and play connectivity to Zaber's joystick
- Up to 14 mm/s speed; up to 15 N thrust
- Joystick and controllers included

Product Description

Zaber's M-LSM motorized micromanipulators are standalone units that are either joystick or computer controlled. These devices are pre-configured as right or left handed, with either a flat base or optical post bracket. The mounting options are designed for breadboards or optical posts, which can be metric or imperial. An adjustable probe holder allows mounting of probe diameters between 2 and 13 mm.

Installation

These devices are standalone and do not require a computer for basic operation. For computer control, one or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Convenient 6-pin mini-DIN cables on each stage allow for direct interconnection between devices in close proximity. For longer distances, we offer standard cable extensions.

Computer Control

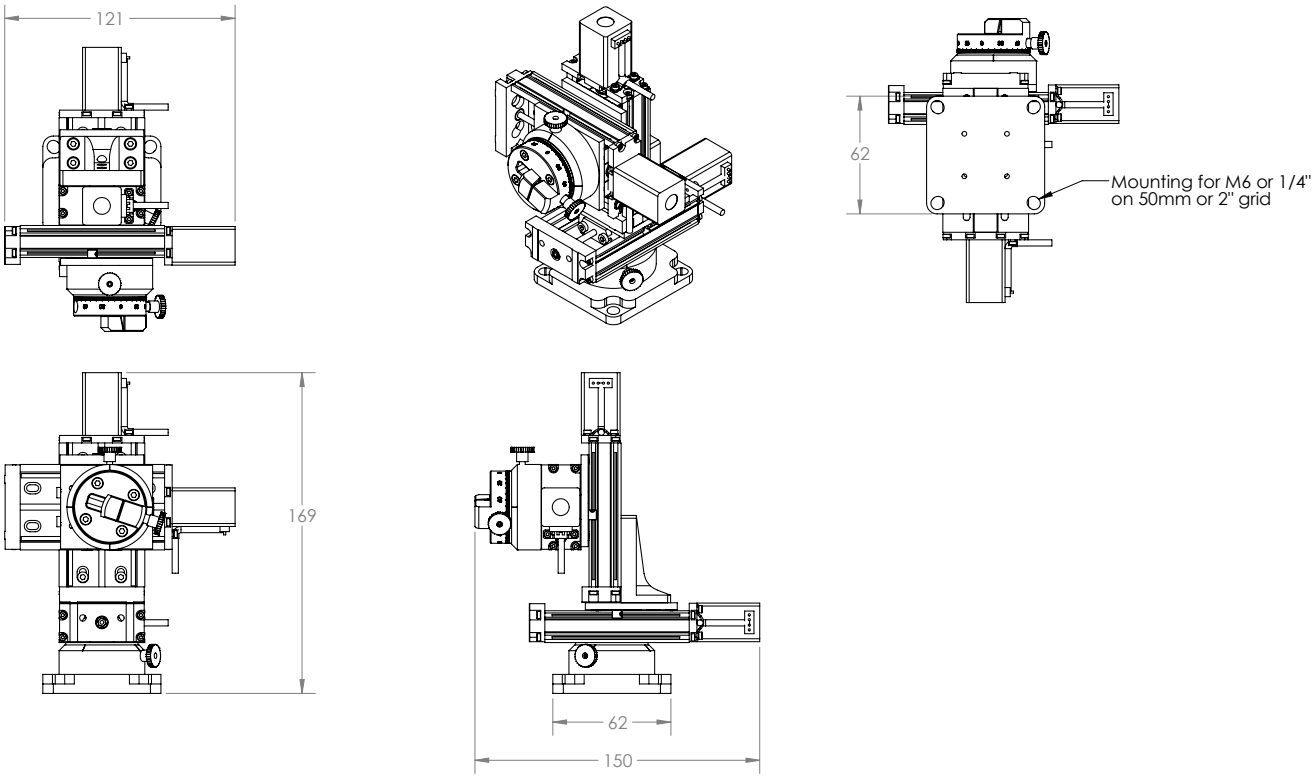
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

Manual Control

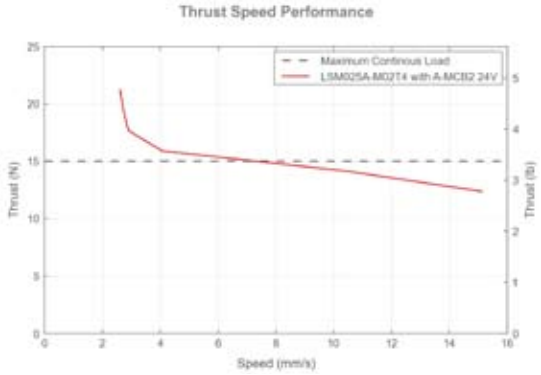
Zaber's joystick is pre-programmed to control the three axes of an M-LSM device. All eight buttons of the joystick can be programmed to store a location, recall a location, or perform a host of other functions. The joystick can also be used in conjunction with a computer for additional power and flexibility.

M-LSM Dimensions

Measurements in millimetres (mm)



M-LSM Performance Charts



M-LSM Specifications

Model	Travel Range (mm)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (No Load) (μm)	Maximum Speed (mm/s)	Probe Diameter Range (mm)	Probe Angle Range (°)	Joystick Control	Weight (kg)
M-LSM025A025A025A-M02T4	25.4	0.048	8	< 1	< 3	14	2-13	360	Velocity Mode	4.232

1. Complete, up-to-date specs available at www.zaber.com.

- 100 or 200 mm travel per axis (custom lengths available)
- Low profile: 70 mm overall height (custom heights available)
- Up to 12 μm accuracy
- Customizable: add another Zaber stage for a Z-axis

T-G-LSM Gantry Systems

Product Description

Zaber's T-G-LSM gantries are designed for multi-axis applications where high loads require the additional support of parallel lower axis stages or where access is required to the entire area under the system. A synchronized lead screw design provides very low backlash and high stiffness for precision positioning. T-G-LSM gantry systems include a baseplate with M6 mounting holes on a 25 mm grid and an integrated cable management system. They ship fully assembled and ready to operate.

Installation

One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Convenient 6-pin mini-DIN cables on the stages allow for direct interconnection between devices in close proximity. For longer distances, we offer standard cable extensions.

Computer Control

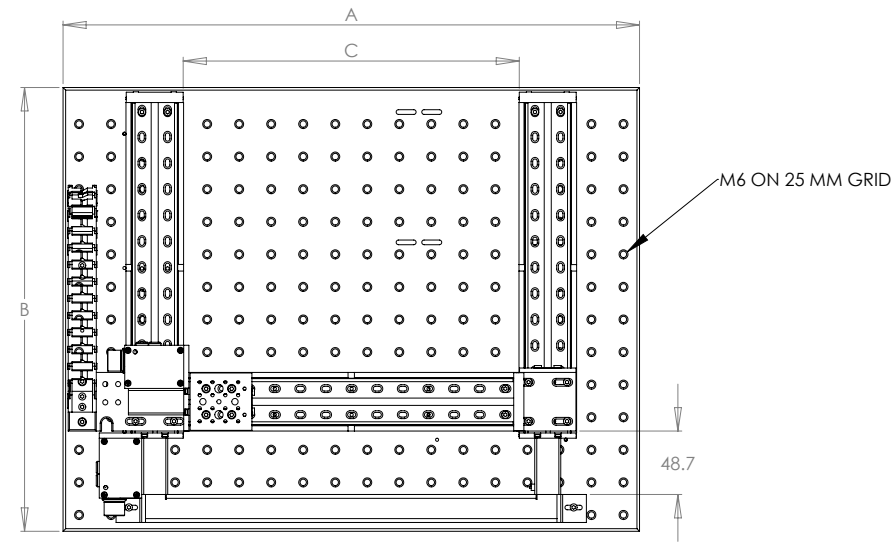
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

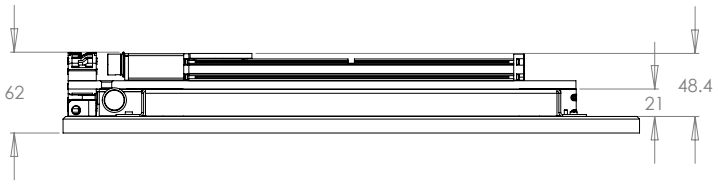
Manual Control

Optional knobs provide smooth manual control at variable speeds in both directions for versatile operation. During a manual move the stage's position is constantly transmitted to the computer and is displayed by the software.

T-G-LSM Dimensions

Measurements in millimetres (mm)



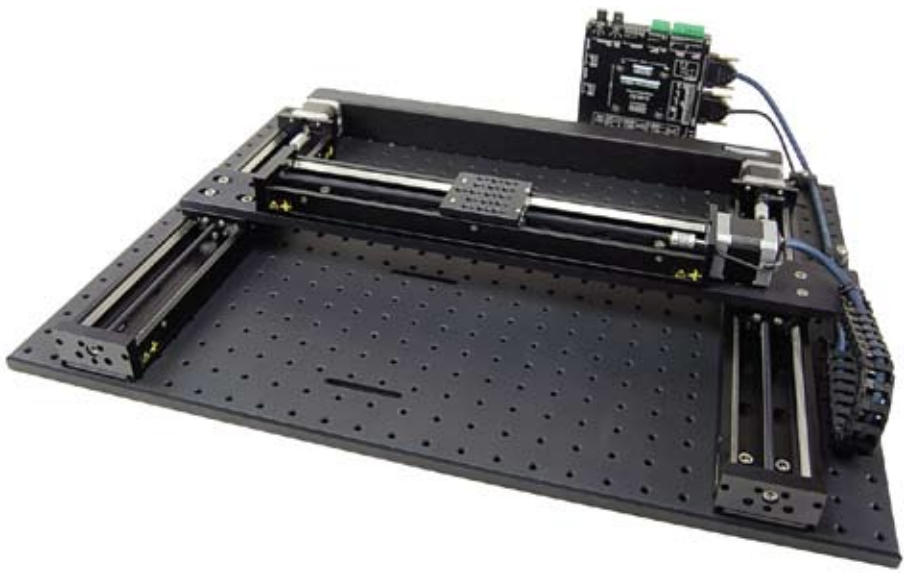


Model Number	A	B	C
T-G-LSM100A100A	350	250	160.2
T-G-LSM100A200A	450	250	261.8
T-G-LSM200A100A	350	340.5	160.2
T-G-LSM200A200A	450	340.5	261.8

Gantry Systems*

Zaber's standard gantry systems, such as the T-G-LSM (see dimension drawing above), are made up of three linear stages and provide two-axis (XY) motion. A fourth stage can be added for a Z-axis. These systems come packaged with all the accessories you will need for operation. The stages in our gantry systems are powered by a standard power supply and connect to the RS-232 port of any computer. We can also make customized gantries with most of our linear stages – you can choose the combination of product family, travel, and lead screw pitch to meet your needs. Exact final gantry system specifications will vary depending on your selections.

*Complete, up-to-date specs available at www.zaber.com.



- 150, 300, or 450 mm travel per axis (custom lengths available)
- Up to 330 mm/s speed or 100 N thrust depending on lead screw choice
- High load capacity: up to 180 N centred load and 800 N·cm cantilever load
- Customizable: add another Zaber stage for a Z-axis
- Designed for use with A-MCB2 stepper motor controllers

G-LSQ Gantry Systems

Product Description

Zaber's G-LSQ gantries are designed for multi-axis applications where high loads require the additional support of parallel lower axis stages or where access is required to the entire area under the system. A synchronized lead screw design provides low backlash and high stiffness for precision positioning. G-LSQ gantry systems include a baseplate with M6 mounting holes on a 25 mm grid and an integrated cable management system. They ship fully assembled and ready to operate.

Installation

The G-LSQ gantries are designed to connect directly to our A-MCB2 stepper motor controllers. The A-MCB2 controllers can be daisy-chained with each other or any of Zaber's A-Series or T-Series products.

Computer Control

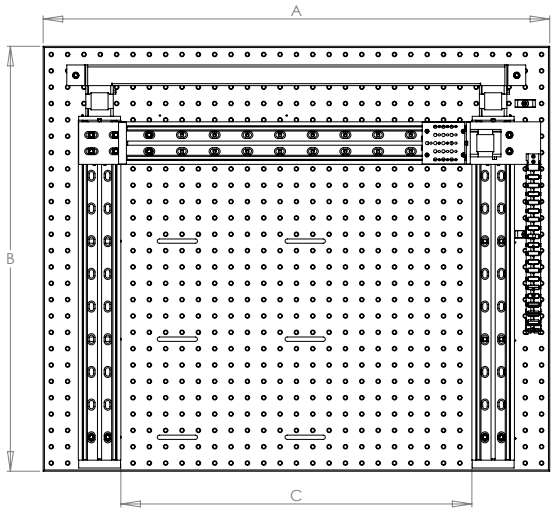
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the stage reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

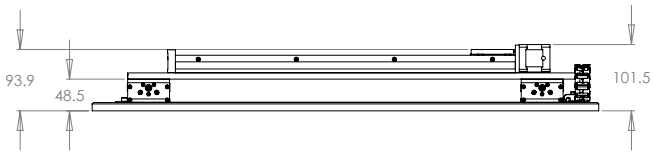
Manual Control

Two convenient knobs on the A-MCB2 controller permit smooth manual control of both axes. During a manual move the stage's position is constantly transmitted to the computer and is displayed by the software. The knobs on the A-MCB2 controller allow you to use the G-LSQ gantry even without a computer.

G-LSQ Dimensions

Measurements in millimetres (mm)





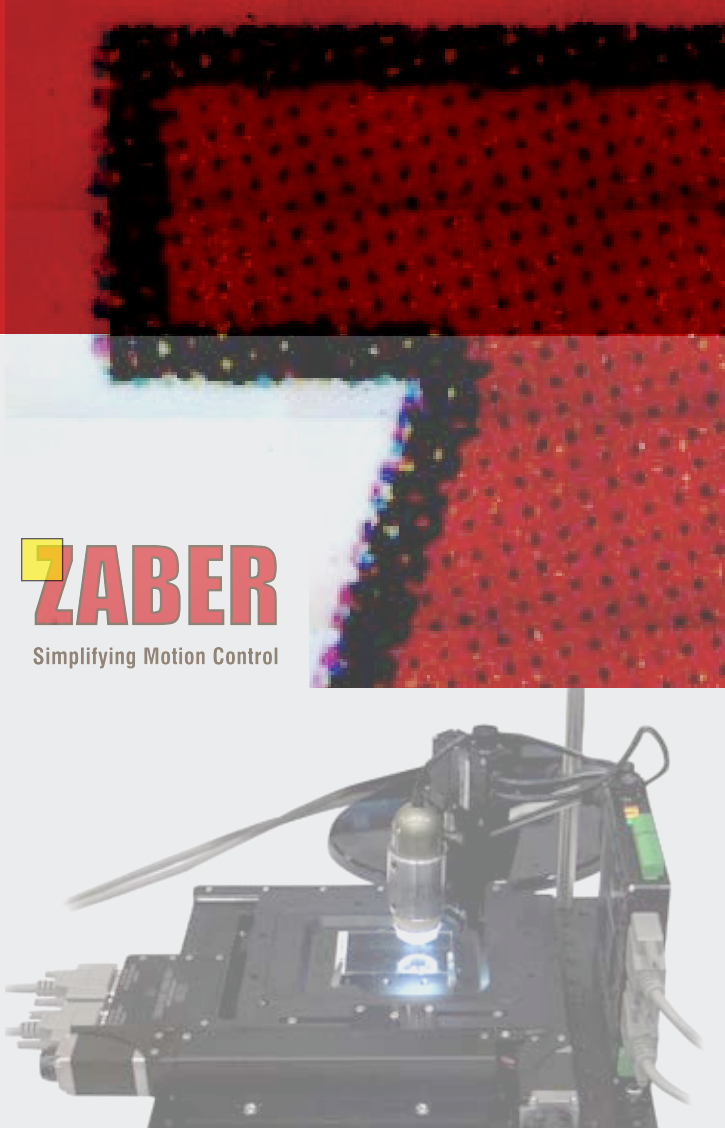
Model Number	A	B	C
G-LSQ150A150A-T4	450	350	223
G-LSQ300A300A-T4	650	500	418
G-LSQ450A450A-T4	775	650	537

Gantry Systems*

Zaber's standard gantry systems, such as the G-LSQ (see dimension drawing above), are made up of three linear stages and provide two-axis (XY) motion. A fourth stage can be added for a Z-axis. These systems come packaged with all the accessories you will need for operation. The stages in our gantry systems are powered by a standard power supply and connect to the RS-232 or USB port of any computer. We can also make customized gantries with most of our linear stages – you can choose the combination of product family, travel, and lead screw pitch to meet your needs. Exact final gantry system specifications will vary depending on your selections.

*Complete, up-to-date specs available at www.zaber.com.

Design Spotlight: ASR



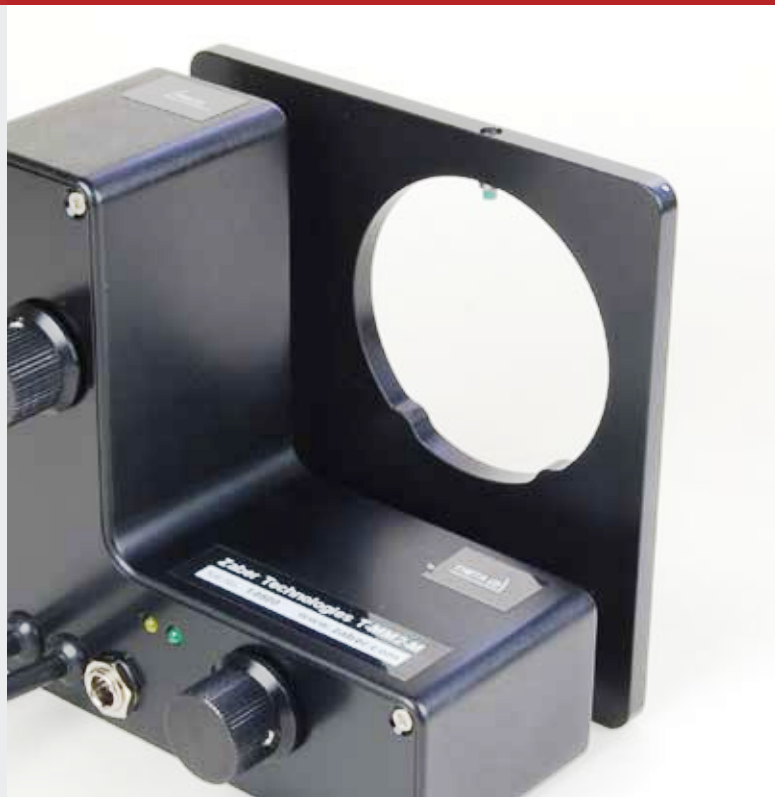
ASR Stage

The ASR is the first product we designed from the ground up as a two-axis stage. We knew that many of our customers were using pairs of our linear stages in XY configurations to achieve planar motion. While this approach does provide a great deal of flexibility, we knew we could come up with a better solution – a purpose-built multi-axis stage. The goal for the project was to design an XY stage with excellent accuracy, high stiffness, and a low overall height. It also needed to have a large aperture and be mountable to most common microscopes. When the dust settled, we ended up with the ASR. This stage is accurate to 12 µm over 120 mm, uses crossed roller bearings for maximum stiffness, and is one of the lowest profile XY stages available, with only 42 mm in overall height.

This stage is especially well suited for scanning and imaging applications. During development, we were so keen to see what the ASR could do that we set up a scanning station using an ASR stage, an A-MCB2 two-axis controller, and a small USB microscope. For a set-up that would cost less than $7,000 in total, we were astonished to see what could be accomplished. The results of a scan of a business card at 220 times magnification are shown above (top right). The images we captured were aligned based only on the target positions of the stage – no image stitching algorithms were used.

– David Goosen, Research and Development

Tilt



T-OMG Motorized Gimbal Optic Mounts

- Two-axis gimbal optic mount with built-in controller
- Holds 1″ (25 mm) optics
- +/- 7° travel in each axis
- Compact design weighs only 350 g (0.75 lb)

Product Description

The T-OMG is a high-resolution, computer-controlled, two-axis optic mount. It is a stand-alone unit requiring only a 15 V power supply. Two built-in controllers allow for easy, independent manipulation of each axis of rotation.

Installation

One or more gimbal optic mounts can be connected to the RS-232 port (or a USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port.

Computer Control

We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like “move absolute”), and enter the desired position. After the move, the gimbal optic mount reports the new position of each axis.

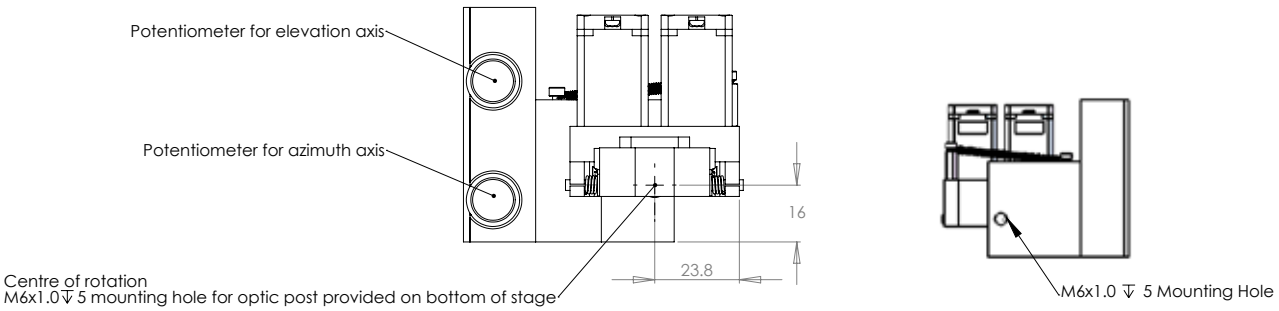
Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

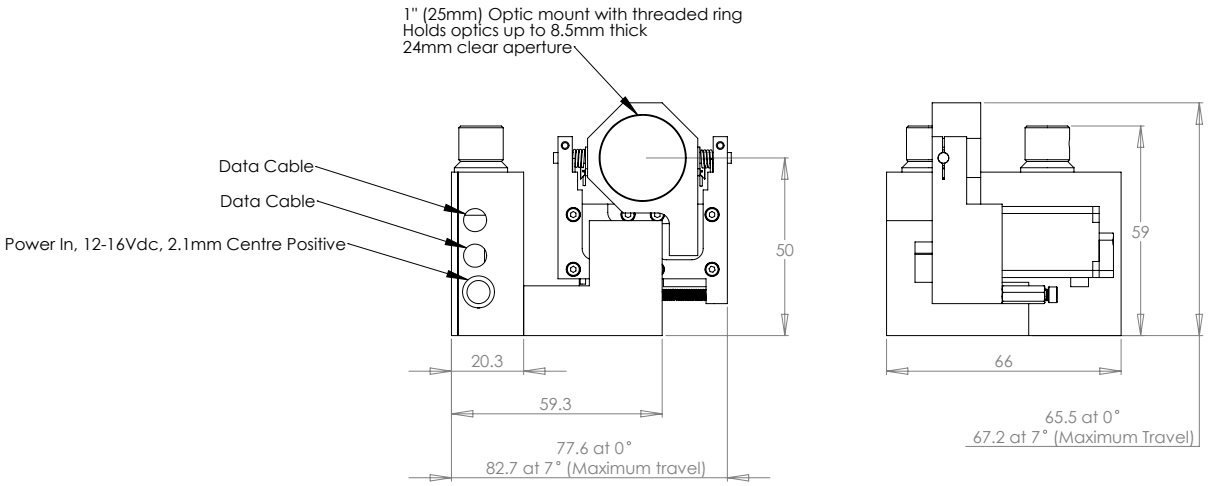
Manual Control

An optional knob provides smooth manual control at variable speeds in both directions for versatile operation. During a manual move the device’s position is constantly transmitted to the computer and is displayed by the software.

T-OMG Dimensions

Measurements in millimetres (mm)


Potentiometer for elevation axis
Potentiometer for azimuth axis
16
23.8
Centre of rotation
M6x1.0↧5 mounting hole for optic post provided on bottom of stage
M6x1.0 ↧ 5 Mounting Hole



T-OMG Specifications

Model	Axis	Travel Range (°)	Microstep Size (Resolution) (°)	Accuracy (°)	Repeatability (°)	Maximum Speed (°/s)	Weight (kg)
T-OMG	Axis 1 (Azimuth)	+/- 7	0.00012	0.055	< 0.007	11	0.35
	Axis 2 (Elevation)	+/- 7	0.00006	0.0275	< 0.004	7	0.35

1. Complete, up-to-date specs available at www.zaber.com.

T-MM Motorized Mirror Mounts

- Two-axis mirror mount (+/- 5.27° tilt) with built-in controller
- Holds 2″ (50 mm) optics
- Optional adaptors: C-mount, 1″ (25 mm), and 1/2″ (12.5 mm) optics

Product Description

The T-MM is a computer-controlled, two-axis mirror mount with 1.5 μrad (0.000086°) resolution. It is a stand-alone unit requiring only a 15 V power supply. It has a built-in controller for each axis, so that you can easily control each axis independently.

Installation

One or more mirror mounts can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port.

Computer Control

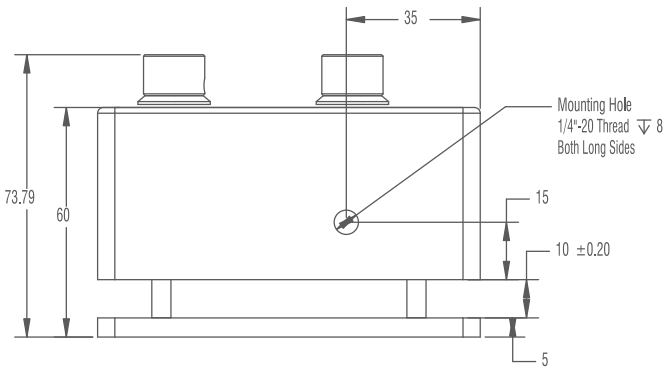
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like “move absolute”), and enter the desired position. After the move, the mirror mount reports the new position of each axis. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

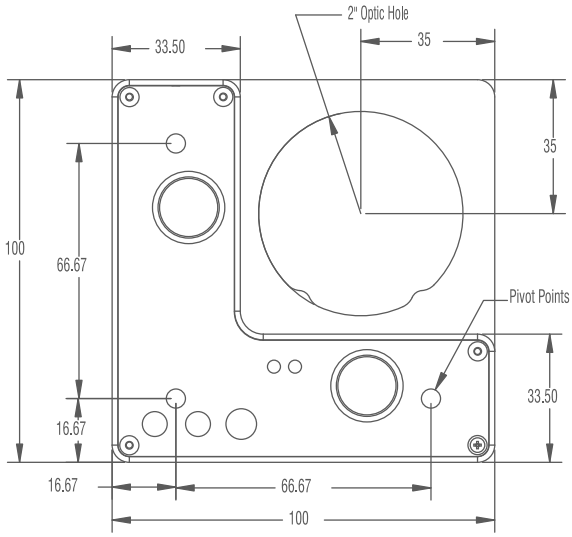
Manual Control

An optional knob provides smooth manual control at variable speeds in both directions for versatile operation. During a manual move the device’s position is constantly transmitted to the computer and is displayed by the software.

T-MM Dimensions

Measurements in millimetres (mm)





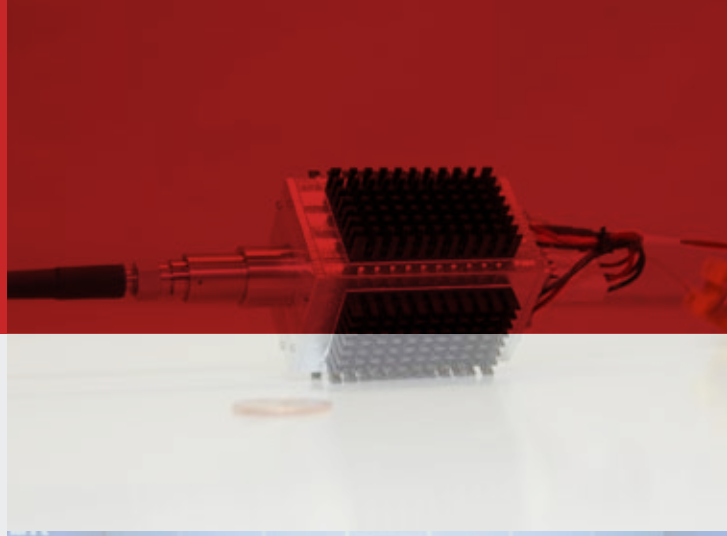
T-MM Specifications							
Model	Travel Range (°)	Microstep Size (Resolution) (°)	Accuracy (°)	Repeatability (°)	Backlash (°)	Maximum Speed (°/s)	Weight (kg)
T-MM2	+/- 5.27	0.000086	0.06	< 0.015	< 0.03	3.44	0.55

1. Complete, up-to-date specs available at www.zaber.com.

I'd like to compliment your company's excellent customer service/support. I've been extremely impressed by my representative's timely replies and helpful answers – rising above and beyond merely answering my questions to provide assistance. The paragraph in which he explained how the XYZ assemblies were created would have been a sufficient answer to my query, but he followed through and uploaded a composite model for me. This saved me time in discovering what I wanted to evaluate about your products, and I can easily imagine a scenario where it would have done something that a customer had neither the knowledge or ability to do (manipulate imported assemblies into a single composite one). Customer service to myself and my company are almost as important as the products themselves, and after this positive experience, we'll be sure to order our linear stages from your company.

– Lee Christoffers, Applied Optimization Inc.

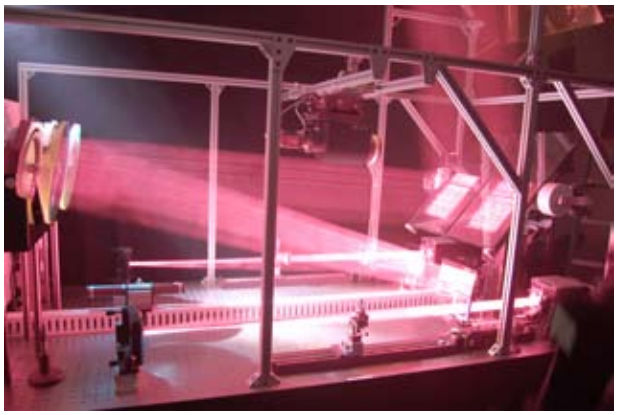
Customer Spotlight: LaserMotive Inc.



LaserMotive Inc.

LaserMotive's customers have had problems delivering *safe*, reliable electrical power in quantity and over distance to meet growing energy demands in extreme environments, where using traditional copper wires to deliver energy may be too difficult, slow, expensive, or dangerous. LaserMotive transmits electrical power with a unique technology that enables next generation lifestyle convenience for consumers' portable electronics, and solves power delivery challenges for industry customers in the power utility, commercial aircraft, telecom, unmanned aerial vehicle, and other markets.

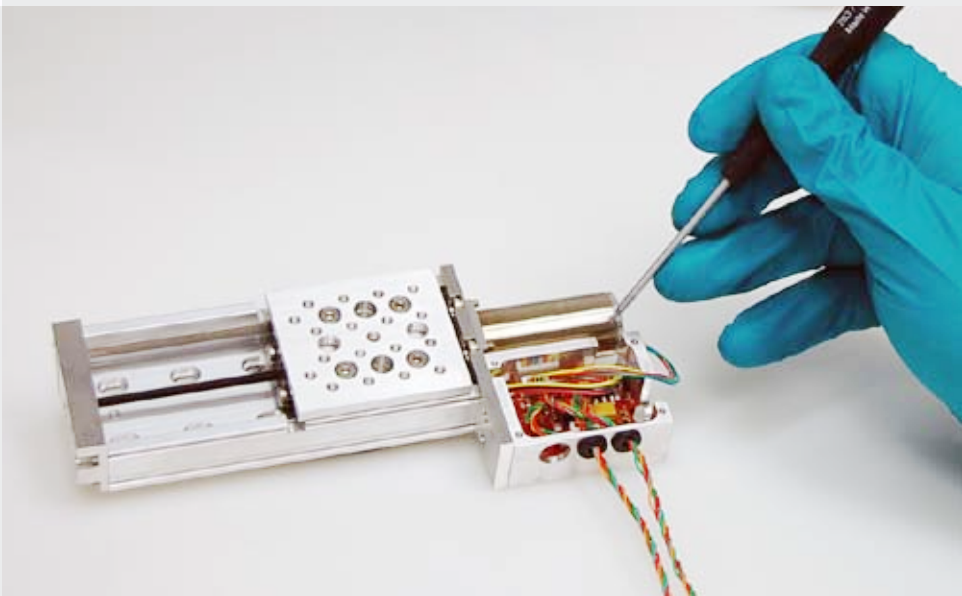
www.lasermotive.com

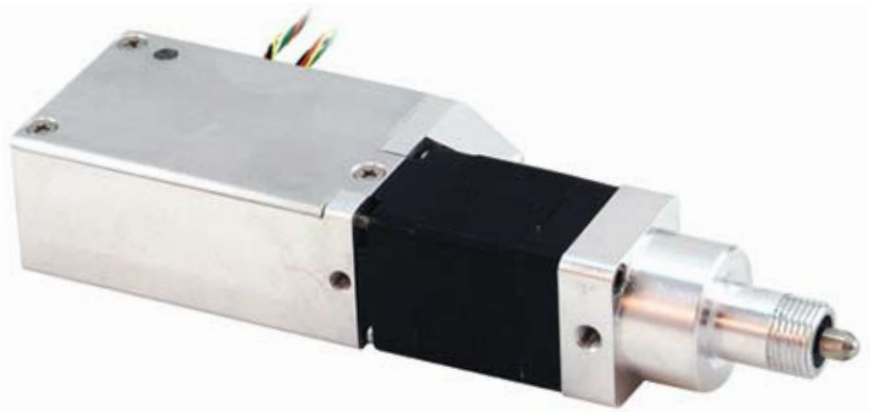


We have been using our development platform laser transmitter (first used to win the 2009 NASA Centennial Challenge in Power Beaming) for a series of demonstrations of our wireless power delivery via laser. That laser transmitter uses a pair of Zaber's T-LSR450D linear slides to drive the focus element. The high speed and accuracy of the T-LSR450D enable us to meet the requirements for keeping our laser beam focused on any moving receiver.

– Tom Nugent, President, LaserMotive Inc.

Vacuum





T-NA-SV Vacuum-Compatible Miniature Linear Actuators

- Integrated motor and controller in a tiny package
- Low and high vacuum versions available
- Daisy-chains with other T-Series products inside vacuum chamber
- Only five feedthrough wires required to run up to four devices

Product Description

Zaber's T-NA-SV series miniature linear actuators are computer controlled, have 0.05 μm resolution, and offer either 25 mm or 50 mm travel. The low vacuum versions (-SV1) are designed for use down to pressures of 10^{-3} Torr, and the high vacuum versions (-SV2) are designed for use down to pressures of 10^{-6} Torr. Each actuator comes with a hardened ball tip that you can remove if you prefer to use the built-in threaded tip or a flat tip. They are stand-alone units requiring only a standard 15 V power supply. Components are chosen for low outgassing, and vacuum-compatible greases and motors are used in both low and high vacuum devices. High vacuum parts are cleaned ultrasonically or by hand with isopropyl alcohol and assembled in a Class 100 cleanroom. High vacuum circuit boards are Parylene coated for vacuum compatibility, and all blind holes in the devices are vented. High vacuum devices are double-bagged in Ultra Low Outgassing (ULO®) polyethylene bags.

Installation

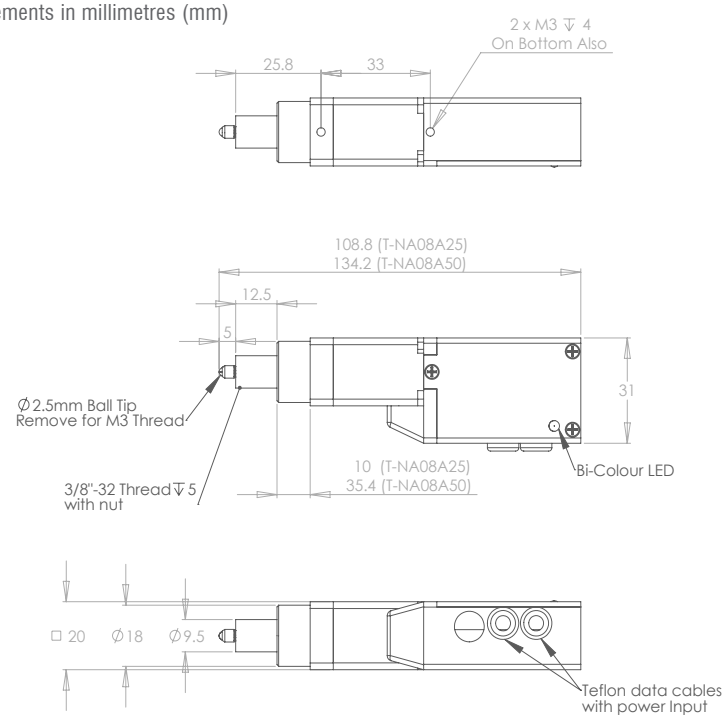
One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Up to four devices can be controlled in a vacuum chamber using only five feedthrough wires. An industry standard 3/8″ (9.5 mm) diameter micrometer shank allows the T-NA-SV to fit many popular stages. The plunger of the T-NA-SV actuator does not rotate.

Computer Control

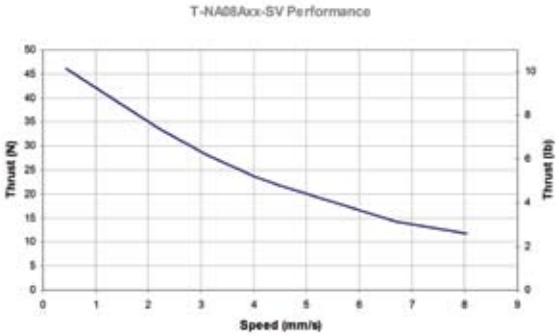
We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the actuator reports its new position. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

T-NA-SV Dimensions

Measurements in millimetres (mm)



T-NA-SV Performance Charts



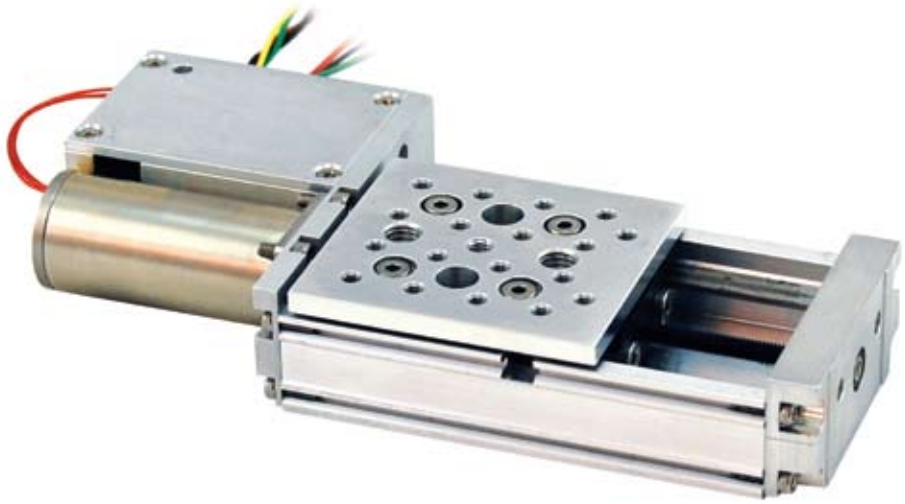
T-NA-SV Specifications

Model	Travel Range (mm)	Vacuum Rating (Torr)	Microstep Size (Resolution) (μm)	Accuracy (μm)	Repeatability (μm)	Backlash (μm)	Minimum Speed (μm/s)	Maximum Speed (mm/s)	Weight (kg)
T-NA08A25-SV1	25.4	10^{-3}	0.048	15	< 1	< 4	0.22	8	0.13
T-NA08A25-SV2	25.4	10^{-6}	0.048	15	< 1	< 4	0.22	8	0.13
T-NA08A50-SV1	50.8	10^{-3}	0.048	30	< 1	< 4	0.22	8	0.15
T-NA08A50-SV2	50.8	10^{-6}	0.048	30	< 1	< 4	0.22	8	0.15

1. Complete, up-to-date specs available at www.zaber.com.

We use Zaber actuators because they are so easy to daisy-chain in a vacuum, and we can think about the experiments we want to do without having to worry about complex wiring or programming. They save us time and money. I would happily recommend them.

– Dr. Fergal O'Reilly, Research Physics and Innovation Officer, Physics Department, University College Dublin



T-LSM-SV Vacuum-Compatible Motorized Linear Stages

- Integrated motor and controller
- Low and high vacuum versions available
- Daisy-chains with other T-Series devices inside vacuum chamber
- Only five feedthrough wires required to run up to four devices

Product Description

Zaber's T-LSM-SV series devices are computer-controlled, vacuum-compatible, motorized linear stages in a very compact size. The low vacuum versions (-SV1) are designed for use down to pressures of 10^{-3} Torr, and the high vacuum versions (-SV2) are designed for use down to pressures of 10^{-6} Torr. They are stand-alone units requiring only a standard 15 V power supply. Components are chosen for low outgassing, and vacuum-compatible greases and motors are used in both low and high vacuum devices. High vacuum parts are cleaned ultrasonically or by hand with isopropyl alcohol and assembled in a Class 100 cleanroom. High vacuum circuit boards are Parylene coated for vacuum compatibility, and all blind holes in the devices are vented. High vacuum devices are double-bagged in Ultra Low Outgassing (ULO®) polyethylene bags.

Installation

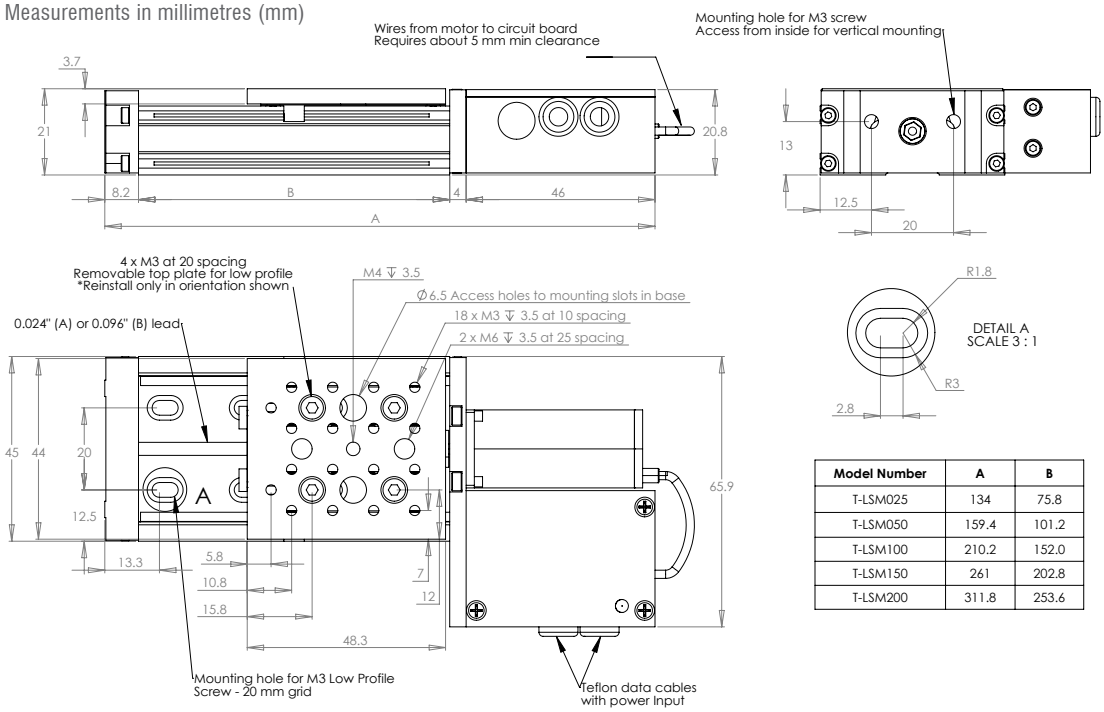
One or more devices can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port. Up to four devices can be controlled in a vacuum chamber using only five feedthrough wires. These stages are ready for assembly in XY or XYZ configuration with no additional hardware required. See Multi-Axis section for more information.

Computer Control

We provide free software so you can easily control your Zaber devices. Zaber's intuitive Windows software makes it easy to control the speed and position of the unit and change the device settings. After completing a move command, the stage will report its position through the RS-232 link. Built-in scripting allows you to easily set up complex automation routines. For LabVIEW users, we offer a free, certified LabVIEW driver. For a detailed list of available commands, see the user's manual.

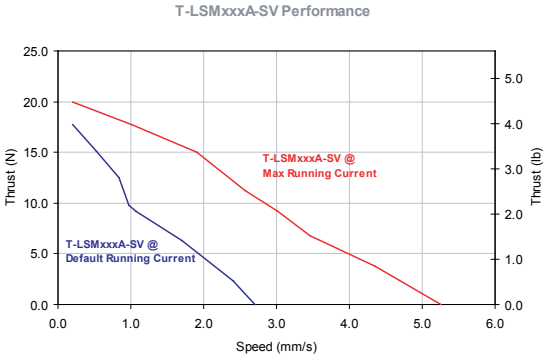
T-LSM-SV Dimensions

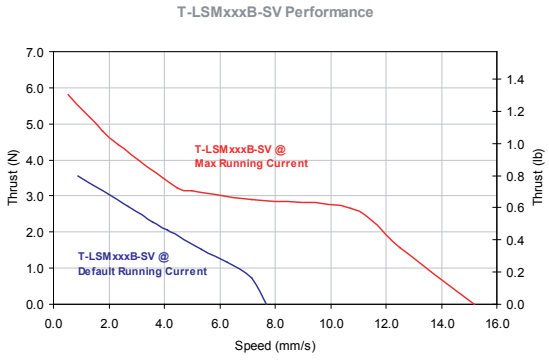
Measurements in millimetres (mm)



Model Number	A	B
T-LSM025	134	75.8
T-LSM050	159.4	101.2
T-LSM100	210.2	152.0
T-LSM150	261	202.8
T-LSM200	311.8	253.6

T-LSM-SV Performance Charts





T-LSM-SV Specifications

Model*	Travel Range (mm)	Microstep Size (Resolution) (µm)	Accuracy (µm)	Repeatability (µm)	Backlash (µm)	Maximum Speed (mm/s)	Maximum Centred Load (N)	Maximum Cantilever Load (N·cm)	Peak Thrust (N)	Weight (kg)
T-LSM025A-SV2	25.4	0.048	8	< 1	< 3	4	100	300	16	0.31
T-LSM025B-SV2	25.4	0.19	8	< 4	< 13	15	100	300	6	0.31
T-LSM050A-SV2	50.8	0.048	15	< 1	< 3	4	100	300	16	0.32
T-LSM050B-SV2	50.8	0.19	15	< 4	< 13	15	100	300	6	0.32
T-LSM100A-SV2	101.6	0.048	30	< 1	< 3	4	100	300	16	0.35
T-LSM100B-SV2	101.6	0.19	30	< 4	< 13	15	100	300	6	0.35
T-LSM150A-SV2	152.4	0.048	46	< 1	< 3	4	100	300	16	0.40
T-LSM150B-SV2	152.4	0.19	46	< 4	< 13	15	100	300	6	0.40
T-LSM200A-SV2	203.2	0.048	61	< 1	< 3	4	100	300	16	0.42
T-LSM200B-SV2	203.2	0.19	61	< 4	< 13	15	100	300	6	0.42

*Specs listed here apply to low vacuum (-SV1) stages, rated for 10^{-3} Torr, and high vacuum (-SV2) stages, rated for 10^{-6} Torr.
1. Complete, up-to-date specs available at www.zaber.com.

TSB-V Low Vacuum Translation Stages

- Compatible with Zaber's T-NA-SV1 actuators (shown upper right)
- Reversible mounting bracket allows left-hand or right-hand operation
- Brackets have a convenient clamping mechanism for easy adjustments

Product Description

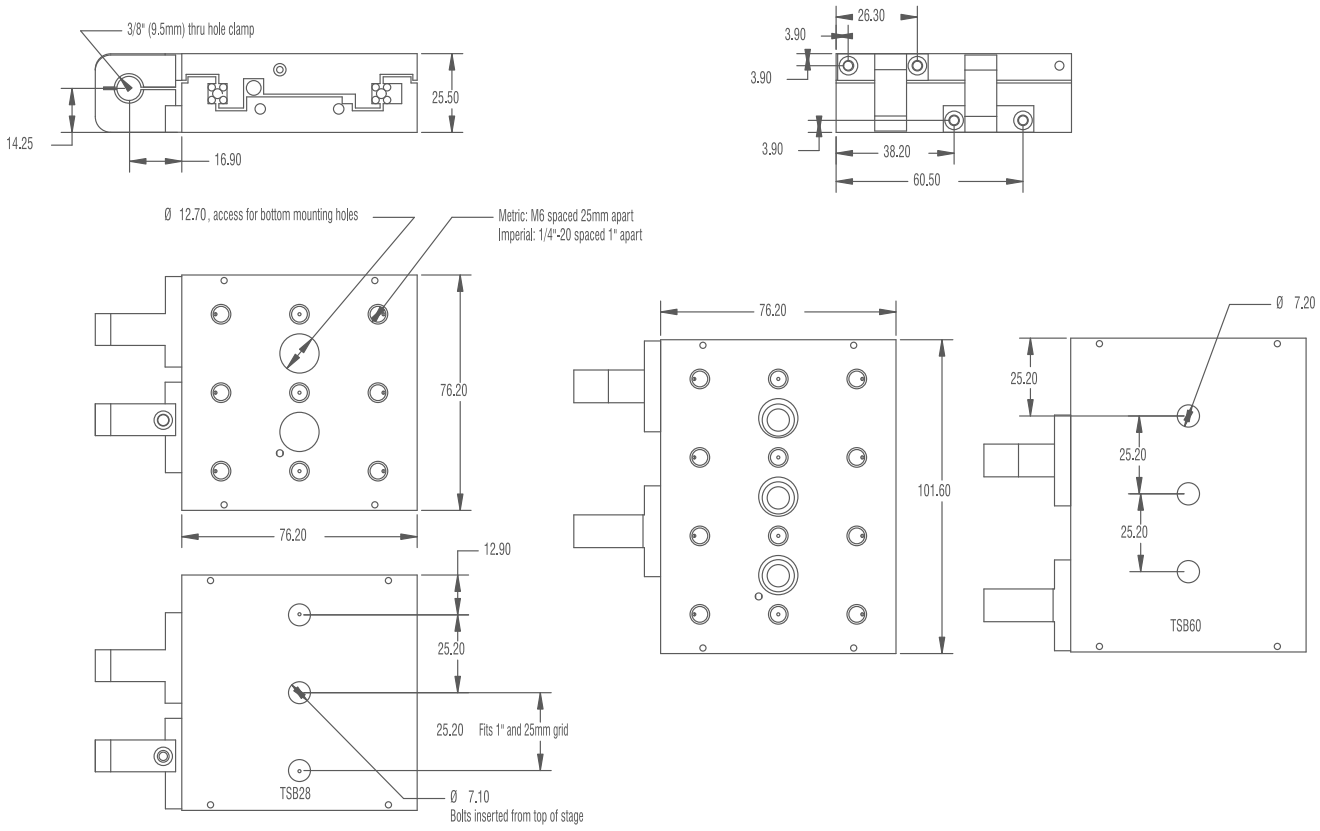
Zaber's low vacuum TSB-V ball bearing translation stages are available in two sizes, offering either 28 mm or 60 mm of travel. TSB-V stages ensure smooth and accurate motion: they are made from precision-machined aluminum, with precision-ground rails and ball bearings. Choose from either metric M6 mounting holes on 25 mm spacing, or imperial 1/4″-20 mounting holes on 1″ spacing. These stages use vacuum-compatible greases and non-anodized components. They are designed for use down to pressures of 10^{-3} Torr.

Installation

Each stage includes a pair of actuator mounting brackets that include a convenient clamping mechanism to grip actuators and are easily adjusted or locked in place. The mounting brackets are compatible with Zaber actuators: the standard 9.5 mm brackets fit our T-NA-SV1 series of actuators. TSB-V stages can be mounted directly in XY configuration. Optional AB90-V angle brackets are available for mounting in XYZ configuration.

TSB-V Dimensions

Measurements in millimetres (mm)



TSB-V Specifications						
Model	Travel Range (mm)	Maximum Centred Load (N)	Maximum Cantilever Load (N·cm)	Stage Parallelism (μm)	Vacuum Rating (Torr)	Mounting Thread
TSB28E-V	28	100	125	< 100	10^{-3}	1/4″-20
TSB28M-V	28	100	125	< 100	10^{-3}	M6
TSB60E-V	60	100	125	< 100	10^{-3}	1/4″-20
TSB60M-V	60	100	125	< 100	10^{-3}	M6

1. Complete, up-to-date specs available at www.zaber.com.

T-MM-V Vacuum-Compatible Motorized Mirror Mounts

- Rated for 10^{-3} Torr
- Two-axis mirror mount (+/- 5.27° tilt) with built-in controller
- Holds 2″ (50 mm) optics
- Optional adaptors: C-mount, 1″ (25 mm), and 1/2″ (12.5 mm) optics

Product Description

The T-MM-V is a vacuum-compatible, computer-controlled, two-axis mirror mount with 1.5 µrad (0.000086°) resolution. It is a stand-alone unit requiring only a 15 V power supply. It has a built-in controller for each axis, so that you can easily control each axis independently.

Installation

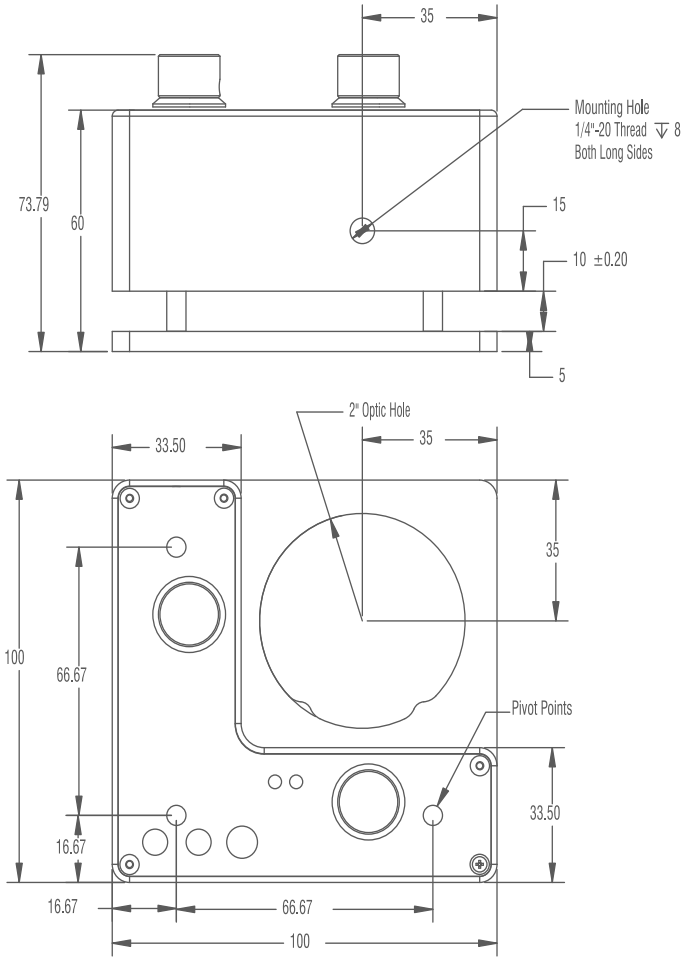
One or more mirror mounts can be connected to the RS-232 port (or USB port with optional adaptor) of any computer. Multiple devices can be daisy-chained to a single port.

Computer Control

We provide free software so you can easily control your Zaber devices. Simply select the device you want to move, select a command (like “move absolute”), and enter the desired position. After the move, the mirror mount reports the new position of each axis. Built-in scripting allows you to easily set up complex automation routines. We also provide all of our source code so that you can customize our software for your application.

T-MM-V Dimensions

Measurements in millimetres (mm)



T-MM-V Specifications								
Model	Travel Range (°)	Microstep Size (Resolution) (°)	Accuracy (°)	Repeatability (°)	Backlash (°)	Maximum Speed (°/s)	Vacuum Rating (Torr)	Weight (kg)
T-MM2-V1	+/- 5.27	0.000086	0.06	< 0.015	< 0.03	3.44	10^{-3}	0.55

1. Complete, up-to-date specs available at www.zaber.com.

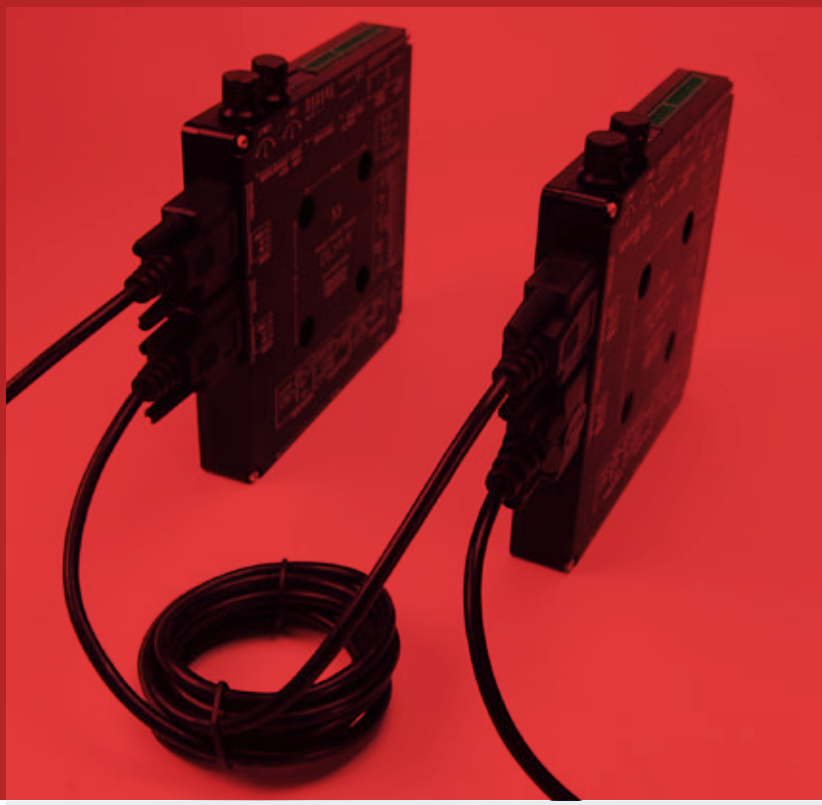
Design Spotlight: A-MCB2

A-MCB2 Two-Axis Stepper Motor Controller

The A-MCB2 was a first for Zaber in many ways. It was the first dual axis controller, the first controller with user programmable I/O, the first to speak to the Zaber ASCII protocol, and the first to directly support additional communications interfaces, including USB. While many new features were added, the A-MCB2 is still 100% compatible with our existing products. The A-MCB2 and the ASCII protocol were developed in response to customer requests for multi-axis control, I/O, and easy interfacing to PLCs. The A-MCB2 sets a new standard for Zaber motion controllers.

– Nathan Dyer, Firmware and Electronics

Controllers



A-MCA Stepper Motor Controllers

- Controls any bipolar stepper motor or actuator up to 2.5 A/phase
- Manual control knob: move the device at variable speeds and distances
- Mounts easily to panel, lab bench, or electronics cabinet
- Contains presets for Zaber actuators and stages

Product Description

Zaber's A-MCA stepper motor controller has the capability of handling encoder feedback and communicating in ASCII, making it compatible with hundreds of third-party terminal programs and suitable for more rigorous industrial applications.

Installation

Set-up is a snap. Just connect the controller to the RS-232 port (or USB port with optional adaptor) and plug in a compatible motor or actuator. Multiple devices can be daisy-chained to a single port. Plug in a motor or actuator and you're ready to go.

Computer Control

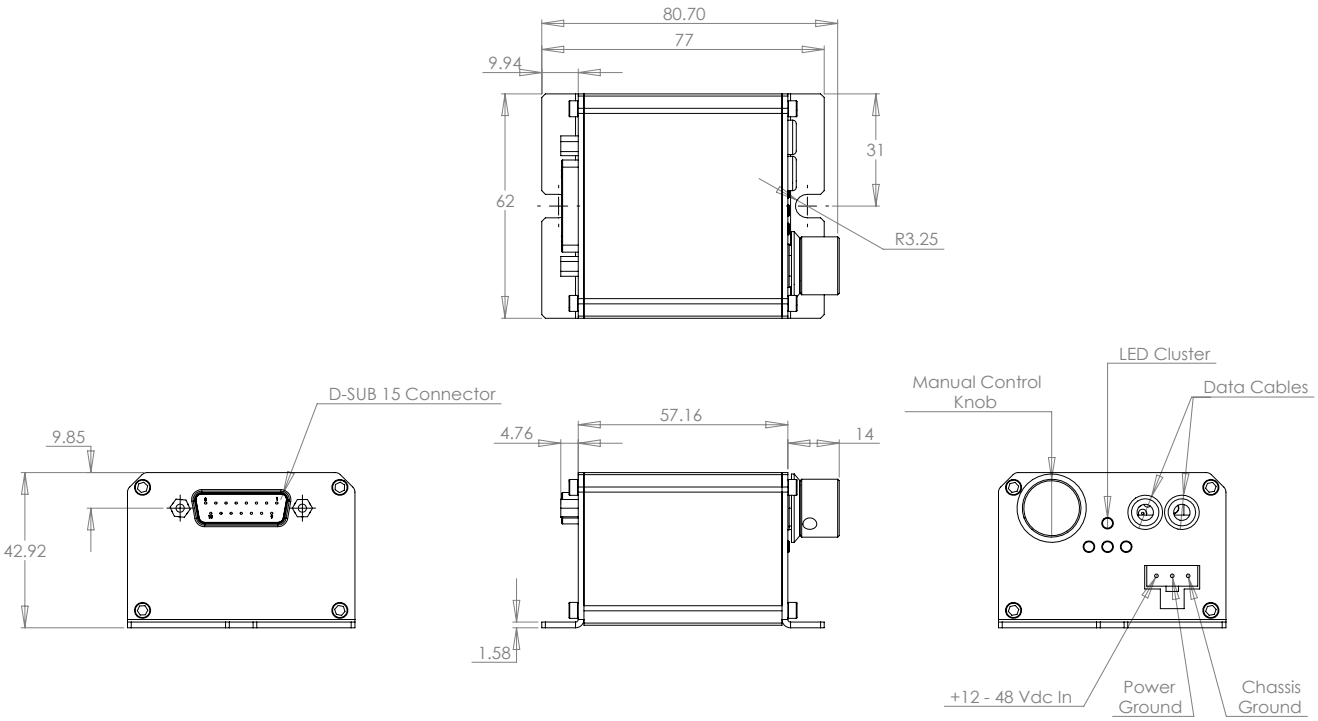
We provide free software so you can easily control your Zaber devices. It automatically recognizes all your devices and allows you to communicate with each one. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the controller reports the device's new position. You can also change a variety of device settings, such as the running current and hold current, to suit your application's needs. Built-in scripting allows you to easily set up automated routines, and we provide all of the source code, so programmers can modify it for advanced customization.

Manual Control

Zaber's A-Series devices have an indexed knob that provides convenient manual control for versatile operation even without a computer. In velocity mode, turning the knob starts the device moving at a constant speed, and every increment increases or decreases the speed by a configurable amount. In displacement mode, each increment of the knob moves the device by a configurable distance. Pushing in the knob for 5 seconds switches between the modes. You can also issue a stop command by depressing the knob during any operation.

A-MCA Dimensions

Measurements in millimetres (mm)



A-MCA Specifications

Model	Current Output per Phase (mA)	Input Voltage (VDC)	Operating Temperature (°C)	Communication Protocol	Motor Connector	Manual Control	Encoder Input	Weight (kg)
A-MCA	2500	12–48	0–50	RS-232 binary, RS-232 ASCII	D-sub 15	Indexed knob/ push switch	Quadrature	0.15

1. Complete, up-to-date specs available at www.zaber.com.

I am very impressed with how the Zaber staff have been handling [my RMA. You have been] extraordinarily patient and helpful with all my questions and in working with me to get my old units changed out and replaced with better options.

– Gideon Coltof, Bodkin Design and Engineering, LLC

- Controls two axes of bipolar stepper motors or actuators up to 2.5 A/phase with high resolution, customizable microstepping
- Four isolated digital inputs, four isolated digital outputs, and four analog inputs
- Intuitive ASCII protocol simplifies complex automation tasks
- Designed for easy mounting to panels, breadboards, lab benches, and enclosures

A-MCB2 Two-Axis Stepper Motor Controllers

Product Description

The A-MCB2 controller is designed from the ground up with powerful yet easy-to-use features. It can drive two axes of bipolar stepper motors up to 2.5 A/phase (with or without encoders), and it has isolated digital input and output, as well as analog input for interfacing with the physical world. Microstepping resolution of the drive can be set at any value between 1 and 256 microsteps per step, allowing both customizability and fine resolution movement. An intuitive ASCII interface allows the user to easily communicate with the device through the Zaber Console (our free software), as well as third party terminal programs. An event-driven trigger system allows the device to be programmed for stand-alone operation based on I/O, time, or movement stimuli. The A-MCB2 also has a backwards-compatible mode, which allows it to work with all of Zaber's existing T-Series and A-Series products.

Installation

Set-up is a snap. Just connect the controller to a computer via USB or a RS-232 serial port, and plug in a compatible motor or actuator. Multiple devices can be daisy-chained to a single port. Plug in a motor or actuator and you're ready to go.

Computer Control

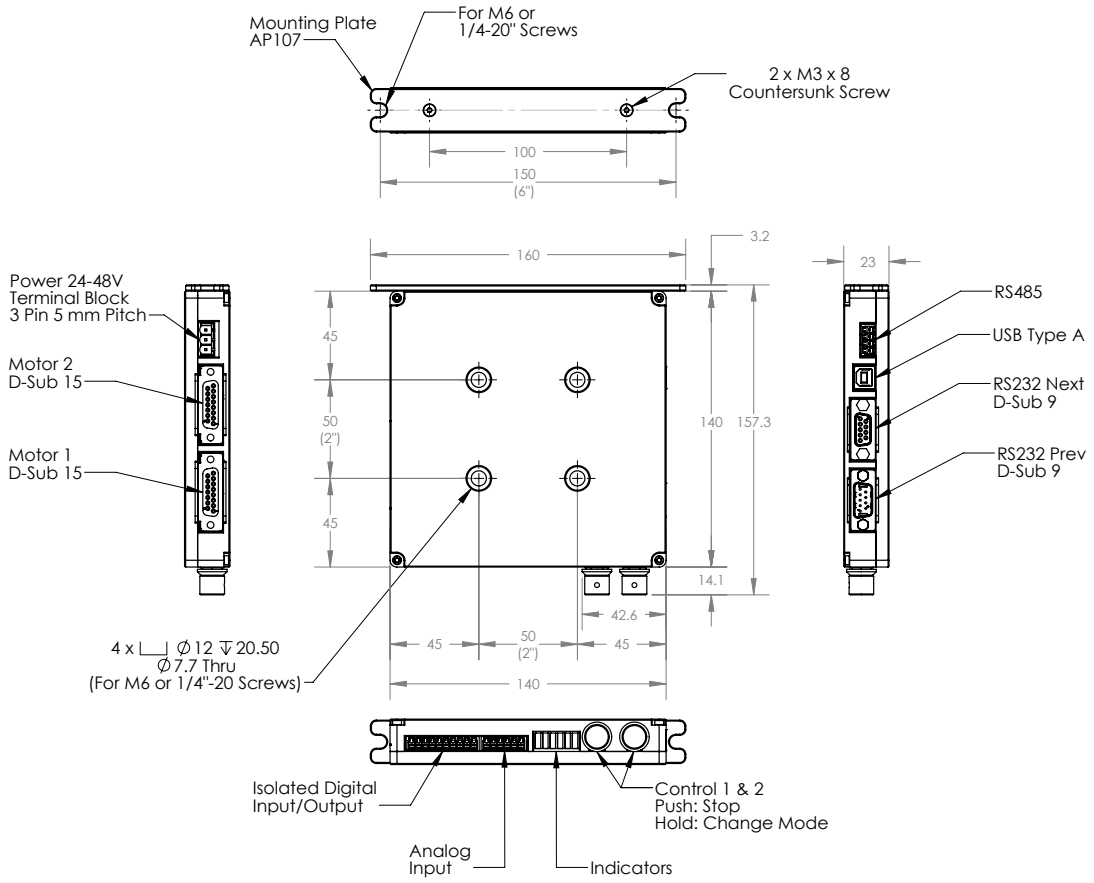
We provide free software so you can easily control your Zaber devices. It automatically recognizes all your devices and allows you to communicate with each one. Simply select the device you want to move, select a command (like "move absolute"), and enter the desired position. After the move, the controller reports the device's new position. You can also change a variety of device settings, such as the running current and hold current, to suit your application's needs. Built-in scripting allows you to easily set up automated routines, and we provide all of the source code, so programmers can modify it for advanced customization.

Manual Control

Zaber's A-Series devices have an indexed knob that provides convenient manual control for versatile operation even without a computer. In velocity mode, turning the knob starts the device moving at a constant speed, and every increment increases or decreases the speed by a configurable amount. In displacement mode, each increment of the knob moves the device by a configurable distance. Pushing in the knob for 5 seconds switches between the modes. You can also issue a stop command by depressing the knob during any operation.

A-MCB2 Dimensions

Measurements in millimetres (mm)



A-MCB2 Specifications

Model	Current Output per Phase (mA)	Input Voltage (VDC)	Operating Temperature (°C)	Communication Protocol	Motor Connector	Manual Control	Microstepping Range (microsteps per step)	Encoder Input
A-MCB2	2500	24–48	0–50	ASCII, Binary	D-sub 15	Indexed knob/ push switch	1–256	Quadrature

1. Complete, up-to-date specs available at www.zaber.com.

One of our primary goals at Zaber has always been to hire people who will enjoy their work. Our hobbies and interests are reflected in the roles we play within the company, and many of us would be doing much the same work whether we were being paid to or not. People who work happy work better, and that is reflected in the quality of our products and customer service.

– Rob Steves, President

T-JOY Programmable Joystick Controller

- Controls up to three axes with programmable sensitivity and velocity profile
- Compact bench-top design enables human interface with or without a computer
- Five programmable buttons for functions like store and recall positions

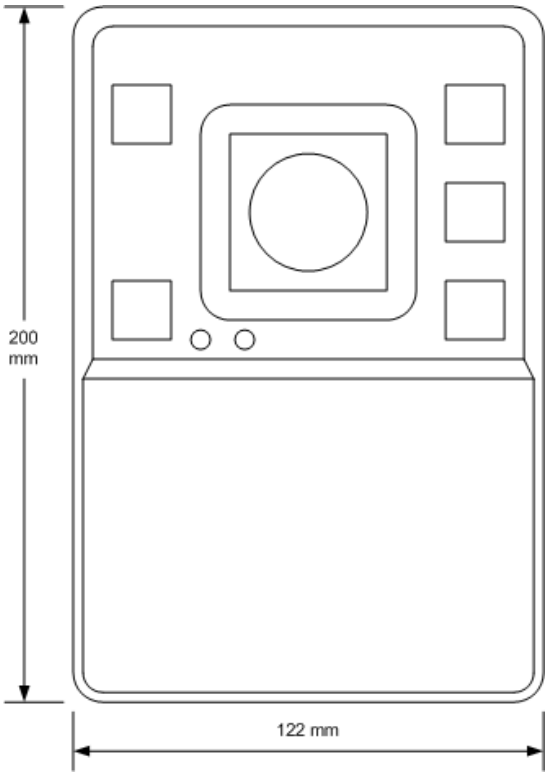
In stand-alone operation, the T-JOY3 is ideal for XY or XYZ applications. The joystick is intuitive to use, and the buttons are preprogrammed with commands to home the devices, save current positions, and go to saved positions. It is ideal for applications where complex computer control is not required.

For more sophisticated applications, you can connect the T-JOY3 to your computer so both the computer and the joystick can simultaneously control connected motion devices through the daisy-chain. The joystick's five buttons are fully programmable: send any command to the devices connected by the daisy-chain, or trigger the computer to execute preprogrammed command sequences. The software continuously displays the status of the joystick and the devices attached to it. The entire daisy-chain can be controlled through a single RS-232 port (or USB port with optional adaptor) on a laptop or desktop.

One axis is controlled by moving the joystick from left to right, another by moving the joystick from front to back, and a third by rotating the handle. By programming the joystick, you can specify which connected device corresponds to each axis.

T-JOY Dimensions

Measurements in millimetres (mm)



T-JOY Specifications				
Model	Current Draw (mA)	Length (mm)	Width (mm)	Height (mm)
T-JOY3	50	200	122	102

1. Complete, up-to-date specs available at www.zaber.com.

At Zaber we often develop products in direct response to customer requests. Our programmable joystick, the T-JOY3, is a classic example. We had been getting a lot of requests for a joystick that could be used for manual control of our products mounted in XY, XYZ, or XY/rotation configurations. Many customers wanted to position something under a microscope or camera: X and Y would adjust the position and Z would adjust the focus or magnification. We had a lot of success in the concept stage so we were able to design, test, and launch the T-JOY3 in a matter of months. I was happy to see the project completed so quickly. I was even happier to see orders start coming in, followed by positive feedback from customers.

– Andrew Lau, Firmware and Electronics

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Glossary

Accuracy

The maximum error possible when moving between any two positions, when both positions are approached from the same direction.

Backlash (hysteresis)

The maximum difference in the actual position possible when a target position is approached from opposite directions.

Maximum cantilever thrust

The maximum torque that may be applied about the axis of motion.

Maximum centred load

The maximum allowable force that can be applied at the centre of the stage, perpendicular to the stage surface. In the case of a mirror mount, it is the maximum weight that can be mounted to the face plate of the mirror mount.

Maximum speed

The maximum speed at which a motorized device can move under no load. Note that the speed is a function of load and the maximum speed can only be achieved at low loads.

Maximum torque

The maximum torque that a motorized rotary device can apply. Note that torque is a function of speed and the maximum torque is obtained at the lowest speeds.

Microstep size (default resolution)

The calculated angular displacement for each microstep of motor movement at default settings. This displacement is equal to the default microstep resolution (1/64 on most devices) multiplied by the angular displacement travelled during one full step of the motor.

Minimum speed

The minimum speed to which a motorized device can be set.

Motor connection

Describes what type of connector is provided on a motor or motorized device to interface with a motor controller.

Peak thrust

The maximum force that a motorized device can exert in the direction of travel. Note that thrust is a function of speed and the maximum thrust is obtained at the lowest speeds.

Repeatability

The maximum deviation in actual position when repeatedly instructing a device to move to a target position 100 times, approaching from the same direction every time, under stable thermal conditions.

Stage parallelism

The degree of parallelism of the stage top and the base of the stage. This is measured as the maximum deviation in height of the stage top, measured while the device is stationary.

Travel range

The maximum physical range of travel of a motion control device.